

## **CLASS 340, COMMUNICATIONS: ELECTRICAL**

### **SECTION I - CLASS DEFINITION**

This is the residual home for subject matter, not elsewhere classified, relating to communication by means which are in part or in whole electrical.

Communications is defined, for the purpose of this definition, as being the handling of information or intelligence and is not restricted to the conveying of said information or intelligence between geographically spaced points. (Thus, a traffic obstruction light which merely marks a safety island is a means for communicating information or intelligence, viz., the fact of the presence of the traffic island).

Information or intelligence is defined, for the purpose of this definition, as being the subject matter which is handled by signaling systems or signaling devices (such as telegraph systems) or by that portion of nonsignaling systems or nonsignaling devices (such as power supply systems) which is designated in the arts as having a control function (such as the supervisory circuits which control the circuit breakers of an electric power network).

Handling, as used above, is defined as being the active coaction between the tangible communication system or device and the intangible information or intelligence, and such coaction may assume various forms, such as transmission, storage, exhibiting, etc.

- (1) Note. Since Class 340 takes, under the class definition, only those electrical communication systems which are not elsewhere classified, the search, in order to be complete, must, in appropriate instances, extend elsewhere. See Lines With Other Classes, below.
- (2) Note. The combination of the subject matter of this class (340) and art environment is generally classified with the art environment where that environment is significant, either by virtue of a significant disclosed relationship or by virtue of a claimed relationship. Where the art environment is recited by name only, the combination may be classified, in some instances, with the art environment, and in others, in this class (340). For a list of some of the other classes which contain pertinent subject matter, see

the classes referred to under SEARCH CLASS.

- (3) Note. This classification was produced in 1952 by making official the unofficial digests which had been established by the Examiners of Division 42 during the period from about 1910 to about 1942. A caveat is given: While it is believed that the titles and definitions are reasonably correct, no assurance can be given that all of the patents, issued prior to the date of reclassification, are in the proper subclass, since the individual patents were not read during the reclassification project. Consequently, in making a thorough search in this class, it is advisable to investigate every subclass which may possibly be pertinent and not, in order to shorten the search, to rely on the principle of superiority of subclass subject matter because of position in schedule, since the principle is applicable only in classes where each patent has been analyzed and placed in the schedule in accordance with that portion of the disclosed subject matter which is claimed.

### **SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS**

Since Class 340 takes, under the class definition, only those electrical communication systems which are not elsewhere classified, the search, in order to be complete, must, in appropriate instances, extend to Class 178, Class 246, Class 250, Class 332, Class 343, Class 346, Class 348, and Class 379. See References to Other Classes, below.

#### **LINE BETWEEN CLASSES 116, 250, 340, AND 343**

Class 250, Radiant Energy, for signaling systems of the radiant energy type. Such signaling systems are coextensively classified in Class 343, and the class definitions of these two classes should be consulted for the line between Classes 250 and 343, and the class definition of Class 343 for the line between Classes 343 and 116. Note that Class 340 provides for telemetering along a radiant energy beam and for signaling systems having a radiant energy responsive detector.

#### **LINE BETWEEN CLASSES 342, 250, 340, AND 343**

Class 342, Communications: Directive Radio Wave

Systems and Devices (e.g., Radar, Radio Navigation) appropriate subclasses for signaling systems of the radio wave energy type. See the reference to Class 250, *supra*, for the lines between Classes 250, 340, and 343. See Class 343 for antennas with a signal, indicator, or alarm which is responsive to the scan, sweep, or orientation of the antenna; and for antennas with a signal, indicator, or alarm responsive to some other condition of the antenna. See subclass 700 of Class 343 for certain classification lines involving antennas and signals, indicators, and alarms.

### SECTION III - SUBCLASS REFERENCES TO THE CURRENT CLASS

#### SEE OR SEARCH THIS CLASS, SUBCLASS:

- 901, through 996, The following conventions will apply to the definition of these subclasses: (a) A signal is an information-carrying wave; (b) A indicator is a device which makes information concerning a condition available. (c) An alarm is an indicator which makes information available only upon the occurrence of a preselected state of the condition.
- 289, 320, for a significantly recited electric signaling system.
- 533, 538, 288, and 310.01 for the combination of a Class 340 system and a Class 178 system.

### SECTION IV - REFERENCES TO OTHER CLASSES

#### SEE OR SEARCH CLASS:

- 15, Brushing, Scrubbing, and General Cleaning, subclass 339 for brushing, scrubbing and general cleaning machines having a signal or indicator to indicate the condition of the machine or work.
- 34, Drying and Gas or Vapor Contact With Solids, subclass 89 for apparatus of that class combined with indicating or signaling means.
- 40, Card, Picture, or Sign Exhibiting, subclasses 463+ for electrically actuated changeable exhibitors, such as the advertising display type and subclasses 541+ for illuminated signs having significant sign structure in addition to electric illumination. Advertising display elements arranged in matrix are in class (345) subclasses 55+.

- 43, Fishing, Trapping, and Vermin Destroying, subclass 16, 17, and 58 for the subject matter of that class combined with signals and indicators.
- 70, Locks, subclass 434 for locks combined with electric recorders for indicating the previous condition of the lock, and other appropriate subclasses for locks combined with electric signals.
- 73, Measuring and Testing, appropriate subclasses for testing devices which make a test of the Class 73 type (usually nonelectrical and nonchemical) and signal the result of said test by electrical means. Note particularly subclasses 23.2+, 301, 304, 308, 313, 717+, 723+, 733+, and 753+.
- 81, Tools, subclass 479 for torque-responsive wrenches or screwdrivers having electrical means to indicate when a selected torque is exerted.
- 84, Music, subclass 405 for xylophones with electric action, subclass 407 for bell sets (carillons) with electric action and subclass 462 for electric devices responsive to playing of a musical instrument for recording the action of said instrument.
- 99, Foods and Beverages: Apparatus, subclass 285 for beverage infusers having signal means and subclasses 342+ for cookers having signal means.
- 100, Presses, subclass 99 for presses having electrical means to indicate the condition of the press or the material being pressed.
- 109, Safes, Bank Protection, or a Related Device, subclasses 38+ for safes and analogous structures having alarm devices for signaling loss of integrity.
- 114, Ships, subclass 246 for indicators for locating the position of a towed vessel with respect to the towing vessel.
- 116, Signals and Indicators, see Lines With Other Classes and Within This Class, in the class definition for the line between the electrical signals in Class 340 and the mechanical signals in Class 116. Search appropriate subclasses of Class 116 for mechanical signals and indicators analogous to the electrical signals and indicators of Class 340. Search subclass 20 for helios:graphic signaling along a light ray.
- 118, Coating Apparatus, subclasses 712+ for coating apparatus having a signal or indicator.
- 119, Animal Husbandry, subclasses 14.14+ for milkers having a signal or indicator.

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| <p>134, Cleaning and Liquid Contact With Solids, subclass 113 for cleaning or wetting devices having signals or indicators.</p> <p>137, Fluid Handling, subclasses 551+ for fluid handling equipment having signal or indicating means.</p> <p>160, Flexible or Portable Closure, Partition, or Panel, subclass 10 for the subject matter of that class having signals or indicators.</p> <p>169, Fire Extinguishers, subclasses 19+ for fire extinguishing systems having automatically opened valves and subclass 23 for fire extinguishing systems having alarms which indicate some abnormal condition of the fire extinguishing system. The nominal combination of a fire extinguishing system, recited nonsignificantly, as by name only, and a significantly recited electric signaling system is classified in appropriate subclasses of Class 340, (for which see Subclass References to the Current Class above)</p> <p>174, Electricity: Conductors and Insulators, subclass 11 for fluid-insulated conductors having means to indicate the condition of the fluid.</p> <p>177, Weighing Scales, subclasses 45+ for a weigher having an alarm or signal.</p> <p>178, Telegraphy, appropriate subclasses for telegraphic signaling. See the class definition of Class 178 for the line between Classes 178 and 340. The combination of a Class 340 system and a Class 178 system is classified in Class 340 in appropriate subclasses, see Subclass References to the Current Class above.</p> <p>181, Acoustics, subclasses 101+ for mechanical compressional wave devices and systems, such as those used in seismic prospecting, subclasses 123+, for mechanical sound echo systems, and subclass 125 for mechanical sound location apparatus and methods.</p> <p>182, Fire Escape, Ladder, or Scaffold, subclass 18 for a fire escape, ladder, or scaffold having an indicator, signal or alarm.</p> <p>185, Motors: Spring, Weight, or Animal Powered, subclass 14, 36, and 44 for spring and weight motors having indicators to show the extent to which they are wound up or run down.</p> <p>187, Elevator, Industrial Lift Truck, or Stationary Lift for Vehicle, appropriate subclasses for signalling means in combination or limited to use with elevator structure.</p> <p>188, Brakes, appropriate subclasses for significantly claimed brakes or brake systems combined with signals.</p> | <p>194, Check-Actuated Control Mechanisms, subclasses 302+ for coin controlled mechanisms having a signal to indicate the condition (e.g., counterfeit coin) of the mechanism.</p> <p>198, Conveyors: Power-Driven, subclass 40 for conveyors having signaling means.</p> <p>200, Electricity: Circuit Makers and Breakers, subclass 308 for switches having indicators to indicate the position or condition of the switch.</p> <p>215, Bottles and Jars, subclasses 365+ for receptacles having indicating means and subclasses 201+, 227, and 230 for closures having indicating means.</p> <p>219, Electric Heating, subclass 109 for a current supply indicator (e.g., a recorder, etc.) to a metal heating (e.g., resistance heating, etc.) pressure bonding (e.g., resistance welding, etc.) apparatus, subclass 209 combined with a diverse-type electrical art device, subclass 248 for a heating device combined with a sole plate-type pressure application means (e.g., a flatiron, etc.) including a condition-responsive indicator, subclass 269 for an igniter-type resistive element indicating means, subclass 445.1 for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including an indicator, subclasses 446.1+ for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including a sensing means, subclass 487 for a heating device having a power supply and voltage or current regulation or current control means to control or regulate plural separate distinct heating resistance elements (i.e., one control system for all elements, etc.) selectively, sequentially, or alternately including indicator means, subclass 506 for a heating device having automatic regulating or control of power supply and voltage including signal or indicator means, subclass 667 for a condition responsive temperature load sensing power switching supply system for an inductive heating device, subclass 714 for a remote control system for a microwave heating device, subclass 719 for a timer control system for a microwave heating device, or subclass 720 where a control system for a microwave heating device has a display or alarm.</p> <p>221, Article Dispensing, subclasses 2+ for article dispensers not otherwise classified having indicators or signals.</p> <p>222, Dispensing, subclasses 23+ for fluent material dispensing means having indicators or signals.</p> |
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- 232, Deposit and Collection Receptacles, subclasses 34 through 37 for letter boxes having signals or indicators.
- 234, Selective Cutting (e.g., Punching), subclasses 4+ for a typographical punching machine provided with means to indicate approach to and entry into the justification zone; subclasses 13+ and 22+, for a selective cutting machine with automatic control usually initiated by an indicator or detector of a given operating condition; subclasses 59+, for a pattern-controlled selective cutting machine which may be electrically operated.
- 235, Registers, subclass 61 for mechanical calculators, subclasses 400+ for ordnance control data calculators, subclasses 419+ for electromechanical or mechanical record controlled calculators, subclasses 435+ for coded record sensors, and subclasses 487+ for coded records adapted to be read by machine.
- 241, Solid Material Comminution or Disintegration, subclass 101.01 for the subject matter of that class having signals and indicators.
- 242, Winding, Tensioning, or Guiding, subclass 357, 472.0+, 479.9+, 484.8, 484.9+, 534+, 563+, and 912 for a detector, signal, or indicator associated with winding or unwinding an elongated material.
- 246, Railway Switches and Signals, for railway signaling and control systems. See the class definition of Class 246 for the line between Classes 246 and 340.
- 250, Radiant Energy, for signaling systems of the radiant energy type; subclasses 306+ for methods and apparatus for inspecting solids or liquids by charged particles, subclasses 330+ for the detection of infrared patterns and the conversion of the pattern into a light image, subclasses 336.1+ for methods and apparatus to detect and indicate the intensity or frequency of invisible radiation or the testing of materials by detecting and indicating the change in invisible radiation caused by the material, and subclasses 200 to 239 for photocell light-responsive circuits and apparatus. (See Lines With Other Classes and Within This Class)
- 258, Railway Mail Delivery, subclass 2 for the subject matter of that class (which includes delivery to and from airborne vehicles) having signaling features.
- 276, Typesetting, subclass 11 for typesetting machines having means for indicating the length of the line set.
- 291, Track Sanders, subclass 17 for track and vehicle sanding machines provided with alarms to indicate the operation thereof.
- 307, Electrical Transmission or Interconnection Systems, appropriate subclasses for the subject matter of that class having signals and indicators. Note that many of the systems of this class, while not having signals and indicators, have automatic controls which are analogous to signals.
- 312, Supports: Cabinet Structure, subclasses 234+ for cabinets having indicators.
- 313, Electric Lamp and Discharge Devices, subclass 10 for electric space discharge devices, such as vacuum tubes, or electric lamps having temperature indicators.
- 314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 9 for electric arc lamps having a signal or indicator.
- 315, Electric Lamp and Discharge Devices: Systems, subclasses 129+ for electric gas discharge device systems or electric lamp systems having signals, indicators or alarms and subclasses 364+ for space discharge devices testing or lamp testing equipment having signals or indicators.
- 318, Electricity: Motive Power Systems, subclass 490 for electric motor systems having signals or indicators.
- 320, Electricity: Battery or Capacitor Charging or Discharging, appropriate subclass for a battery or capacitor charging or discharging circuit combined with an indicator.
- 322, Electricity: Single Generator Systems, subclass 99 for electric generator systems having signals or indicators.
- 324, Electricity: Measuring and Testing, appropriate subclasses for testing systems for making tests of electric properties having means to indicate the result of the test. Note subclasses 323+ for testing systems for locating ore bodies having means to indicate the result of the test, and subclasses 76.11+ for meters for measuring a property of an electric current or voltage or combination thereof (e.g., power factor, watt-hours, phase angle frequency). Telemetering systems which utilize a meter as a portion thereof are in Class 340 subclasses 870.02+, but the meter subcombination, per se, is classified with the meters of Class 324. Telemetering systems which, by significantly claimed structure or circuit, indicate the result of an electrical test at a point remote from the point of measurement are classified with the test in

- Class 324, as such telemetering systems are not of general utility, but are restricted to use in Class 324 measurements.
- 329, Demodulators, for demodulators of modulated intelligence including continuous waves (CW), and which furnish something more than the mere indication of the initiation of the signal.
- 331, Oscillators, appropriate subclasses, for electric oscillation generators of utility in the communication systems of Class 340. Class 331, subclass 64 for oscillator systems provided with an indicator, signal or alarm.
- 332, Modulators, subclass 118 and 150 for modulators having signals and indicators.
- 333, Wave Transmission Lines and Networks, for wave transmission systems wherein electromagnetic wave energy is guided or constrained by a propagation medium of appreciable electrical length as compared to the wavelength of the propagated energy. This class includes numerous networks and components useful in communications. Note particularly subclass 20 for wave-shaping networks of the passive type, subclasses 24+ for coupling networks including delay networks and filters, and subclasses 236+ for long lines having distributed electrical parameters, and subclasses 1+ for plural channel systems of these lines and networks.
- 336, Inductor Devices, subclass 45 for inductors having movable parts and means to indicate the position of the movable part.
- 338, Electrical Resistors, subclasses 13+ and 68+ for variable resistors including rheostats and potentiometers.
- 341, Coded Data Generation or Conversion, appropriate subclasses for code conversion, transmission or generation.
- 342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation) appropriate subclasses for signaling systems of the radio wave energy type. (See Lines With This Class and Within Other Classes.)
- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 1.1 through 3.4 for plural display systems, and subclasses 418-475 for computer graphics processing.
- 346, Recorders, appropriate subclasses for signals or indicators which record, and subclass 16 and 17+ for recorders combined with signals and indicators.
- 348, Television, appropriate subclasses for television communication systems.
- 356, Optics: Measuring and Testing, for visible light type testing and examination instruments particularly for light radar devices in subclass 3, subclasses 43 for optical pyrometers, subclass 625 for measuring dimension, subclass 388 for configuration comparison devices, subclass 402 for shade or color test devices, subclasses 213 for photometers, and subclasses 237.1 for flaw and imperfection devices.
- 358, Facsimile and Static Presentation Processing, appropriate subclasses for data processing for static presentation to printer, and facsimile communication systems.
- 360, Dynamic Magnetic Information Storage or Retrieval, appropriate subclass for read/write dynamic storage systems.
- 362, Illumination, appropriate subclasses for illuminating means which may serve as signalling means.
- 365, Static Information Storage and Retrieval, appropriate subclass for read/write static storage systems, subclasses 185.01+ for floating gate memory storage (e.g., flash memory).
- 367, Communications, Electrical: Acoustic Wave Systems and Devices, for electrical communication systems in which the intelligence communicated is transmitted in part as acoustic wave energy.
- 368, Horology: Time Measuring Systems or Devices, subclasses 46+ for electric systems which indicate time and for electric clocks.
- 370, Multiplex Communications, appropriate subclasses for multiplexing systems.
- 374, Thermal Measuring and Testing, subclasses 163+ for a thermometer with an electrical heat sensor and a quantitative signalling arrangement.
- 377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclasses 112+ for electrical counters with display or indication.
- 380, Cryptography, subclasses 255 through 276 for a communication system using cryptography.
- 381, Electrical Audio Signal Processing and Systems, appropriate subclasses for one-way audio signal transmission and audio signal processing systems.
- 396, Photography, subclasses 429+ for a camera combined with diverse art devices.
- 400, Typewriting Machines, appropriate subclasses for typewriters having signals to indicate the condition or operation of the machine. Note particularly subclasses 70+.

- 404, Road Structure, Process, or Apparatus, subclasses 9+ for nonelectric roadway structure designed to direct traffic.
- 406, Conveyors: Fluid Current, subclasses 34+ for conveyors having signals or indicators.
- 422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, subclasses 50+ or 105+ for chemical apparatus having means to electrically signal a condition of said apparatus or the result of a chemical test.
- 429, Chemistry: Electrical Current Producing Apparatus, Product, and Process, subclasses 90+ for battery having measuring, testing, or indicating means.
- 434, Education and Demonstration, subclasses 327+ for educational appliances which have a question and hidden answer, some of which signal a correct answer and subclasses 112+ for machines by which a blind person can read printed material, said machine furnishing signals which are a coded representation of the printed material.
- 441, Buoys, Rafts, and Aquatic Devices, subclasses 6+ for floating buoys utilized for marine navigation.
- 446, Amusement Devices: Toys, appropriate subclasses for various electric and magnetic toys which utilize electric signals, particularly subclass 142, 242, 454, and 484+.
- 505, Superconductor Technology: Apparatus, Material, Process, subclasses 150+ for high temperature ( $T_c > 30$  K) superconducting devices, and particularly subclasses 182+ for light responsive system or subclass 202 for electric communication system.
- 600, Surgery, subclasses 300+ for electric diagnostic devices having signals or indicators.
- 700, Data Processing: Generic Control Systems or Specific Applications, subclasses 1 through 89 for generic data processing control systems, particularly subclass 18 for programming methods or procedures; and subclasses 90-306 for particular application of data processing systems or calculating computers.
- 702, Data Processing: Measuring, Calibrating, or Testing, appropriate subclasses for measuring, testing, or calibrating system having significant data processing.
- 704, Data Processing: Speech Signal Processing, Linguistics, Language Translation and Audio Compression/Decompression, subclasses 200+ for artificial intelligence systems that process speech signals.
- 706, Data Processing: Intelligent Processing Systems and Methods, various subclasses for artificial intelligence systems that represent, apply, and acquire knowledge.
- 708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 1+ for hybrid computers; subclasses 100+ for digital calculating computers, and subclasses 800+ for analog computers.
- 709, Electrical Computers and Digital Processing Systems: Multiple Computer or Process Coordinating, subclasses 200+ for data transfer among multiple computer systems.
- 714, Error Detection/Correction and Fault Detection/Recovery, subclasses for apparatus and corresponding processes relating to generic error detection or correction, or fault detection or recovery.

## SUBCLASSES

### 2.1 Path selection:

This subclass is indented under subclass 825. Subject matter having a plurality of alternative communication channels and selection of less than the total number of channels for signal transmission.

### SEE OR SEARCH CLASS:

- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits and Systems, subclasses 365 through 508 for miscellaneous gating circuits which switch input to output.
- 370, Multiplex Communications, subclasses 351 through 430 for apparatus or technique for locating a route through a switching network wherein two or more simultaneous information signals are conveyed.
- 379, Telephonic Communications, subclasses 219 through 241 for plural exchange network or interconnection and subclasses 242-332 for centralized telephone switching system.
- 710, Electrical Computers and Digital Data, Processing Systems: Input/Output, subclasses 100 through 132 for system intraconnecting, and particularly subclasses 131 and 132 for path selection and switching (e.g., crossbar

switching) in a digital data processing system.

## 2.2 Channel selecting matrix:

This subclass is indented under subclass 2.1. Subject matter wherein a communication line is selected using a two or more dimensional array of electrical elements.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

14.1 through 14.69, for a decoder matrix.

## 2.21 Plural stages:

This subclass is indented under subclass 2.2. Subject matter including multiple levels of plural matrices to form a path through all successive levels.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

2.27, for plural matrices in general, subclass 2.6 for plural stage path selection in general, and subclass 14.2 for plural stage decoder matrix.

SEE OR SEARCH CLASS:

370, Multiplex Communications, subclass 388 for apparatus or technique for locating a route through a multistage switching network wherein two or more simultaneous information signals are conveyed.

## 2.22 Clos type:

This subclass is indented under subclass 2.21. Subject matter wherein the multiple levels are arranged in a nonblocking manner.

(1) Note. A nonblocking matrix is one that always has an available path between a particular input and a particular output.

## 2.23 Alternate routing:

This subclass is indented under subclass 2.2. Subject matter wherein the path through the plural stage matrix system may be modified upon failure of connection between the desired input and output line.

SEE OR SEARCH CLASS:

370, Multiplex Communications, subclasses 225 through 228 for multiplex fault recovery with inoperative channel bypassing.

## 2.24 Having master control element:

This subclass is indented under subclass 2.21. Subject matter including a supervisory element which controls a plural stage matrix.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

2.26, for channel selecting matrix having master control element in general.

## 2.25 Folded:

This subclass is indented under subclass 2.2. Subject matter wherein inputs and outputs of the two or more dimensional array are on the same side of the array.

SEE OR SEARCH CLASS:

370, Multiplex Communications, subclass 361 for apparatus or technique for locating a route through a folded switching network wherein two or more simultaneous information signals are conveyed.

## 2.26 Having master control element:

This subclass is indented under subclass 2.2. Subject matter including a supervisory element that controls a two or more dimensional array.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

2.24, for plural stage channel selecting matrix having master control element.

## 2.27 Plural matrices:

This subclass is indented under subclass 2.2. Subject matter including multiple, interconnected, two or more dimensional arrays of electrical elements.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

2.21 through 2.24, for plural stage communication matrices.

**2.28 Crosspoint switch detail (i.e., specific crosspoint):**

This subclass is indented under subclass 2.2.  
Subject matter wherein the matrix element is a specific type of switch used to make a connection for signal transmission.

**2.29 Semiconductor:**

This subclass is indented under subclass 2.28.  
Subject matter wherein the crosspoint element has a conductivity intermediate that of conductors and insulators.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

14.6 through 14.69, for a semiconductor crosspoint decoder matrix.

**2.31 Gas discharge:**

This subclass is indented under subclass 2.28.  
Subject matter wherein the crosspoint element comprises a gas discharge tube.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 567 through 643 for gas discharge device detail.

**2.4 Code or pulse responsive:**

This subclass is indented under subclass 2.1.  
Subject matter wherein the channel selection is performed in response to a specified pulse pattern or pulse.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

825.57 through 825.69, for pulse-responsive selective systems, in general.

**2.5 Wiper:**

This subclass is indented under subclass 2.1.  
Subject matter wherein a movable electric contact (e.g., a rheostat) is used to establish a channel for signal transmission.

SEE OR SEARCH CLASS:

338, Electrical Resistors, subclass 68 201 for a mechanically variable type resistor (e.g., rheostat), per se.

**2.6 Plural stages:**

This subclass is indented under subclass 2.1.  
Subject matter including multiple levels of

selectors which are used to establish a path through all successive levels for signal transmission.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

2.21 through 2.24, for a plural stage channel selecting matrix, and 14.2 for a plural stage decoder matrix.

**2.7 Condition of data channel:**

This subclass is indented under subclass 2.1.  
Subject matter wherein selection of a channel is based upon the operational condition of system elements.

**2.71 Hunting:**

This subclass is indented under subclass 2.7.  
Subject matter wherein a search is performed to find a route that is not currently used.

**2.8 Data channel selector line:**

This subclass is indented under subclass 2.1.  
Subject matter wherein a separate line is used to communicate which of the plurality of possible channels is currently selected for signal transmission.

**3.1 Monitoring in addition to control (e.g., supervisory):**

This subclass is indented under subclass 825.  
Subject matter wherein a signal representative of the actual status of the controlled device, with respect to an intended controlled function, is transmitted back to the selective signal source.

(1) Note. For classification herein, there must be at least a controller, a sensor, and a controlled device. If only a single controlled device is present, it must exhibit plural functions. Also present must be a control signal and a status signal.

(2) Note. A controller is also called a central or master station.

SEE OR SEARCH CLASS:

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 1 through 89 for a data processing generic control system, apparatus, or process in general, par-



ticularly subclasses 9 and 10 for supervisory control in a data processing generic control system, apparatus, or process; and subclasses 90-306 for a data processing specific application, apparatus, or process, particularly subclasses 95-212 for product assembly or manufacturing data processing (especially subclass 169 for supervisory machining control) and subclass 241 for central control of plural dispensing units.

### 3.2 Synchronization:

This subclass is indented under subclass 3.1. Subject matter including a reference timing function for operating plural system components.

- (1) Note. The reference timing function often includes a clock-pulse generator.

SEE OR SEARCH THIS CLASS, SUBCLASS:

825.2, 825.21, for such subject matter absent monitoring and control

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Non-linear Devices, Circuits and Systems, subclasses 141 through 163 for miscellaneous signal synchronizing.

368, Horology: Time Measuring Systems or Devices, subclass 47 for wireless synchronization in a plural timepiece system or system device.

370, Multiplex Communications, appropriate subclasses for synchronization in multiplex communication and particularly subclasses 503 through 520 for synchronizing where information is combined or distributed via time channels.

375, Pulse or Digital Communications, subclasses 354 through 376 for pulse or digital communication with synchronization.

713, Electrical Computers and Digital Processing Systems: Support, subclass 400 and 401 for synchronization of clock or timing signals, data, or pulses in digital processing systems.

### 3.21 Time slot or packet:

This subclass is indented under subclass 3.2.

Subject matter wherein the reference timing function includes data frame timing signals such as preamble, header, or frame sync code.

SEE OR SEARCH CLASS:

370, Multiplex Communications, appropriate subclasses for multiplex communications using time slots or packets.

### 3.22 Electromechanical (e.g., relay, rotary distributor):

This subclass is indented under subclass 3.2.

Subject matter wherein the reference timing function includes a mechanical movable element responsive to electrical input such as a relay or rotary distributor.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.8, for monitoring and control utilizing an electromechanical relay in general.

SEE OR SEARCH CLASS:

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 2 through 204 for electromagnetically actuated switches, per se.

361, Electricity: Electrical Systems and Devices, subclasses 160 through 210 for a relay or solenoid control circuit, per se.

### 3.23 Relay chain:

This subclass is indented under subclass 3.22.

Subject matter wherein the movable element includes a series of successively connected relay or counter stages.

SEE OR SEARCH THIS CLASS, SUBCLASS:

825.65 through 825.67, for counting in pulse responsive actuation absent monitoring and control.

### 3.24 Step-by-step:

This subclass is indented under subclass 3.22.

Subject matter wherein the movable element is actuated in accordance with a number of transmitted signals or impulses.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

825.41, 825.42, for selective step-by-step impulse party line having indication or alarm and absent monitoring and control.

### 3.3 Including storage or recording:

This subclass is indented under subclass 3.1. Subject matter combined with the production of a permanent or semipermanent record of a control or representative signal.

- (1) Note. The term "record" is not limited to a tangible object, but includes a stored pattern in a static storage device (e.g., magnetic core matrix).

SEE OR SEARCH CLASS:

- 346, Recorders, appropriate subclasses for recorders, per se.  
 360, Dynamic Magnetic Information Storage or Retrieval, appropriate subclasses for dynamic information storage and retrieval which utilizes a magnetic medium.  
 365, Static Information Storage and Retrieval, appropriate subclasses for static information storage and retrieval (e.g., memory device).  
 369, Dynamic Information Storage or Retrieval, appropriate subclasses for dynamic information storage and retrieval in general.  
 711, Electrical Computers and Digital Processing Systems: Memory, appropriate subclasses for digital processing memory including addressing, accessing, and control thereof.

### 3.31 Storage at controlled device or sensor:

This subclass is indented under subclass 3.3. Subject matter wherein the record is located at either the controlled device or the source of the change in status signal.

### 3.32 Storage at controller:

This subclass is indented under subclass 3.3. Subject matter wherein the record is located at a central station.

### 3.4 Quiescent:

This subclass is indented under subclass 3.1. Subject matter wherein the representative signal is transmitted solely in response to a change in condition.

### 3.41 Collision avoidance:

This subclass is indented under subclass 3.4. Subject matter wherein a protocol is utilized to prevent a transmitting device from interfering with another transmitting device.

SEE OR SEARCH CLASS:

- 370, Multiplex Communications, subclass 462 for channel access arbitration in multiplex communication.

### 3.42 Control to avoid fault:

This subclass is indented under subclass 3.1. Subject matter wherein a control signal is sent to the controlled device to prevent a malfunction.

SEE OR SEARCH CLASS:

- 370, Multiplex Communications, subclasses 216 through 228 for fault recovery in multiplex communication systems.  
 700, Data Processing: Generic Control Systems or Specific Applications, subclasses 90 through 306 for a data processing specific application, apparatus, or process, particularly subclasses 108-111 for performance monitoring in a data processing application of product assembly and manufacturing.

### 3.43 Fault condition detection:

This subclass is indented under subclass 3.1. Subject matter which produces a representative signal in response to a malfunction of the selective device.

- (1) Note. The term "malfunction" is intended to include disagreement between intended and actual controlled function.

**SEE OR SEARCH CLASS:**

- 324, Electricity: Measuring and Testing, subclasses 500 through 556 for fault detecting in electrical circuits and components.
- 370, Multiplex Communications, subclasses 216 through 228 for fault recovery in multiplex communication systems.
- 700, Data Processing: Generic Control Systems or Specific Applications, subclasses 90 through 306 for a data processing specific application, apparatus, or process, particularly subclasses 108-111 for performance monitoring in a data processing application of product assembly and manufacturing.
- 714, Error Detection/Correction and Fault Detection/Recovery, appropriate subclasses for error detection/correction, in general.

**3.44 Control to correct fault:**

This subclass is indented under subclass 3.43. Subject matter wherein a control signal is sent to the controlled device to correct a malfunction.

**3.5 Including addressing:**

This subclass is indented under subclass 3.1. Subject matter with a plurality of controlled devices, each of which is responsive to a specific signal so as to permit individual control.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

825.52, 825.53, for addressing absent a representative signal.

**SEE OR SEARCH CLASS:**

- 700, Data Processing: Generic Control Systems or Specific Applications, subclass 23 for sequence program response addressing in a selective or sequential data processing generic control system, apparatus, or process.
- 711, Electrical Computers and Digital Processing Systems: Memory, subclasses 200 through 221 for generalized address forming in a digital data processing system.

**3.51 Polling or roll call:**

This subclass is indented under subclass 3.5. Subject matter wherein all of the controlled devices will transmit a representative signal in response to a particular signal.

- (1) Note. The transmission of the representative signals may be done in succession.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

10.1 through 10.6, for interrogation response.

**SEE OR SEARCH CLASS:**

- 370, Multiplex Communications, subclass 346 for polling in time channel multiplex free space communication, subclasses 449-457 for multiplex channel assignment polling techniques, and art collection FOR 164 for polling in time division variable channel assignment.
- 379, Telephonic Communications, subclass 92.01 and 92.02 for polling in a telephone system in combination with a diverse electrical system and art collection FOR 114 for polling in a telephone system in combination with a diverse electrical system.
- 710, Electrical Computers and Digital Data Processing Systems: Input/Output, subclass 44 for prioritized polling for I/O access, subclasses 46 and 47 for I/O polling in general, subclass 109 for bus polling access regulation, subclasses 113-118 for centralized bus prioritizing, subclasses 119-125 for decentralized bus prioritizing, and subclass 220 for generalized access polling in a digital data processing system.

**3.52 Group address:**

This subclass is indented under subclass 3.5. Subject matter wherein the specific signal uniquely identifies multiple devices.

**SEE OR SEARCH CLASS:**

- 370, Multiplex Communications, subclass 312 for a free space multiplex message addressed to multiple destinations and subclass 390 for a replicate

packet multiplexed message for multiple destination distribution.

**3.53 Source address:**

This subclass is indented under subclass 3.5. Subject matter wherein the specific signal uniquely identifies its origin.

**3.54 Destination address:**

This subclass is indented under subclass 3.5. Subject matter wherein the specific signal uniquely identifies a device which is to receive and act on the signal.

**3.55 Pulse counting:**

This subclass is indented under subclass 3.54. Subject matter wherein pulse tallying is utilized in forming the destination address.

**SEE OR SEARCH CLASS:**

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, appropriate subclasses for pulse counters, in general.

**3.6 Scanning:**

This subclass is indented under subclass 3.1. Subject matter having plural controlled devices with successive transmission of representative signals from each of the controlled devices.

- (1) Note. It is generally assumed that each device can use the transmission media during an assigned time slot.

**SEE OR SEARCH CLASS:**

370, Multiplex Communications, appropriate subclasses for multiplex communication, in general, utilizing time channels or slots.

**3.61 Continuous:**

This subclass is indented under subclass 3.6. Subject matter wherein the scanning is automatically restarted at its conclusion.

**3.62 Interrupted:**

This subclass is indented under subclass 3.6. Subject matter having structure to interrupt the normal scanning sequence.

- (1) Note. Such interruption may be for the purpose of obtaining an indication of a particular controlled device.

**3.63 Automatic:**

This subclass is indented under subclass 3.62. Subject matter wherein the interruption is in response to a predetermined representative signal.

**3.7 Including indicator:**

This subclass is indented under subclass 3.1. Subject matter having an element which produces a humanly perceptible signal.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 384.1 through 404.3, for an audible indicator, per se.  
407.1 through 407.2, for a tactual indicator, per se.  
815.4 through 815.92, for a visual indicator, per se.  
825.36 through 825.49, for selective communication having an indication or alarm in general.

**SEE OR SEARCH CLASS:**

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 1 through 89 for a data processing generic control system, apparatus, or process in general, particularly subclass 27 for sequence program response status indication in a data processing sequential or selective generic control system, apparatus, or process.

**3.71 Having manual control input:**

This subclass is indented under subclass 3.7. Subject matter wherein a user manually inputs a control signal correlated to an indicator.

**SEE OR SEARCH CLASS:**

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 1 through 89 for a data processing generic control system, apparatus, or process in general, particularly subclasses 17 and 18 for an operator interface in a data processing sequential or selective generic control system, apparatus, or process.

**3.8 Electromechanical relay:**

This subclass is indented under subclass 3.1.  
Subject matter having an electromechanical relay.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

3.22 through 3.24, for synchronization in monitoring and control utilizing an electromechanical relay.

SEE OR SEARCH CLASS:

335, Electricity: Magnetically Operated Switches, Magnets and Electromagnets, subclasses 2 through 204 for electromagnetically actuated switches, per se.

361, Electricity: Electrical Systems and Devices, subclasses 160 through 210 for a relay or solenoid control circuit, per se.

**3.9 Control then monitoring:**

This subclass is indented under subclass 3.1.  
Subject matter wherein the status signal is an indication of the status of the function being controlled.

(1) Note. The status signal is generally a confirmation of whether the controlled function has been completed.

**5.1 Intelligence comparison for controlling:**

This subclass is indented under subclass 825.  
Subject matter which compares an information bearing item or signal with an information reference, and performing a control function in accordance with the comparison.

(1) Note. System controlled by data bearing record (e.g., credit card) having significantly claimed data bearing record feature or record sensing is excluded herein, see search notes below.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

7.1, for paging to control diverse device.

SEE OR SEARCH CLASS:

70, Lock, appropriate subclasses for mechanical locking systems and devices.

235, Registers, subclasses 375 through 386 for systems controlled by data bearing records (e.g., credit card); subclasses 435-486 for coded record sensors; and subclasses 487-495 for data bearing records, per se.

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclass 1 for signal discriminating having comparison without subsequent control.

714, Error Detection/Correction and Fault Detection/Recovery, subclasses 735 through 737 for computer error comparison wherein operational condition is determined by comparing device response to various criteria.

**5.2 Authorization control (e.g., entry into an area):**

This subclass is indented under subclass 5.1.  
Subject matter wherein the comparison determines operation of a controlled device to permit an individual to perform an action.

(1) Note. Lock with significant mechanical structure is excluded from this subclass, see search note below.

SEE OR SEARCH CLASS:

70, Locks, appropriate subclasses for mechanical locking systems and devices.

235, Registers, subclass 382 for similar subject matter where entry is controlled by a data bearing record.

348, Television, subclass 156 for observation of or from a specific location (e.g., surveillance) by a camera to permit entrance or exit of an authorized person or vehicle.

399, Electrophotography, subclass 366 for document handling of unauthorized copy prevention..

463, Amusement Devices: Games, subclass 29 for access or authorization (e.g., game selection, security, etc.) in a data processing game apparatus.

705, Data Processing, Financial, Business Practice, Management or Cost/Price Determination, subclass 44 for credit processing requiring authorization.

**5.21 Varying authorization:**

This subclass is indented under subclass 5.2. Subject matter wherein the comparison is based on a changeable verification logic or data.

**SEE OR SEARCH CLASS:**

235, Registers, subclass 382.5 for credit or identification card system having an arrangement to modify date required for permitting access.

**5.22 Code learning:**

This subclass is indented under subclass 5.21. Subject matter wherein the comparison is based on a presettable or calculated control code.

- (1) Note. Authorization control by password, or I.D. in a computerized control dispensing or vending system is excluded from this subclass, see search notes below.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

5.26, for varying authorization by code rotating or scrambling.  
5.51, for authorization control by manual code input.  
5.6, for authorization control by coded record input (e.g., IC card or key).  
10.51 through 10.52, for transponder programming.

**SEE OR SEARCH CLASS:**

341, Coded Data Generation or Conversion, subclass 78 for a programmable code converter apparatus.  
700, Data Processing: Generic Control Systems or Specific Applications, subclass 237, for authorization control by password, or I.D. in a computerized control dispensing or vending system.

**5.23 Programming from coded record to controller:**

This subclass is indented under subclass 5.22. Subject matter wherein authorization control data stored in a controller (e.g., lock) is defined or modified in response to a received code from a data bearing record or carrier.

- (1) Note. This subclass includes updating or programming of codes in a lock using key or card input.

**5.24 Using additional record or carrier code:**

This subclass is indented under subclass 5.23. Subject matter wherein a first set of data bearing record or carrier code is changed using a second set of data bearing record or carrier code during programming of authorization control data.

- (1) Note. This subclass includes system where a second key or card code is required to authorize programming of a first code.

**5.25 Programming of coded record:**

This subclass is indented under subclass 5.22. Subject matter wherein the presettable or calculated code is stored in a programmable data bearing record or carrier (e.g., electronic key or card).

- (1) Note. This subclass includes updating or programming a code stored on a key or card.

**5.26 Code rotating or scrambling:**

This subclass is indented under subclass 5.21. Subject matter wherein the comparison is based on a control code or key that is effected by a counter/timer control means or an encryption/decryption algorithm for an adequate security purpose.

- (1) Note. Security system having significantly claimed cryptography technique without a control code or key is excluded herein, see search notes below.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

5.22, for varying authorization control by code learning.  
5.51, for authorization control by manual code input.  
5.6, for authorization control by coded record input (e.g., IC card or key).

## SEE OR SEARCH CLASS:

- 380, Cryptography, subclasses 255 through 276 for communication system using cryptography.
- 902, Electronic Funds Transfer, subclass 2 for encryption or decryption of transmitted data in a fund transfer system.
- 705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclasses 50 through 80 for business processing using cryptography.
- 713, Electrical Computers and Digital Processing Systems: Support, subclasses 150 through 184 for multiple computer communication using cryptography, subclasses 182-186 for system access control based on user identification by cryptography, subclass 187 for program modification detection by cryptography, subclass 188 for computer virus detection by cryptography, subclass 189 for data processing using cryptography.

**5.27 Rule based input:**

This subclass is indented under subclass 5.21. Subject matter wherein the comparison is based on a desired pattern of user responses to queries.

- (1) Note. Mere data recall responsive to query is excluded from this subclass, see search notes below.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 10.1 through 10.6, for interrogation response.

## SEE OR SEARCH CLASS:

- 706, Data Processing: Artificial Intelligence, subclass 47 for a knowledge processing system using rule-based reasoning method.

**5.28 Timed access blocking:**

This subclass is indented under subclass 5.2. Subject matter wherein the comparison allows the action to be performed to occur during specified period.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 309.15, for a timed controlled communication system.
- 528, for time delay entry/exit.

## SEE OR SEARCH CLASS:

- 49, Movable or Removable Closures, subclass 29 for time controlled closures.
- 70, Locks, subclasses 272 through 274 for clockwork control operating mechanism, and Dig 45 for time lock and auxiliary lock operable on failure of time lock.
- 368, Horology: Time Measuring Systems and Devices, appropriate subclasses.

**5.3****Having indication of improper access:**

This subclass is indented under subclass 5.2. Subject matter which additionally produces a signal indicative of an invalid access attempt.

- (1) Note. Included herein is alarm and logging of successful and unsuccessful comparisons and tamper indication.
- (2) Note. Indication without access control is excluded from this subclass, see search notes below.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 287 through 309, for a signal box alarm arrangement, particularly subclass 288 for alarm transmission over a power line.
- 426, for vehicle alarms or indication of burglary or unauthorized use.
- 541 through 567, for an intrusion responsive indicator or alarm.

## SEE OR SEARCH CLASS:

- 49, Movable or Removable Closures, subclasses 13 through 14 for closure condition indicator.
- 70, Locks, subclasses 432 through 441 and Dig. 49 for Locks with indicator or alarm.
- 109, Safes, Bank Protection, or a Related Device, subclass 21 for bank protection device with alarm or indicator, subclass 31 for art device combined

- with fluent material distributing, generating device for alarm or indicator, subclass 38 for combined art device with alarm or indicator.
- 116, Signals and Indicators, subclass 6 for burglar alarm and subclass 33 for vehicle theft prevention.
- 348, Television, subclass 152 for intrusion detection by a television camera.
- 379, Telephonic Communications, subclass 37 for emergency or alarm communications (e.g., watchman's circuit), particularly subclass 39 for responsive to sensed nonsystem condition, external to the telephone system, and subclasses 106.01-106.11 for remote condition indication, other than an emergency or alarm condition, over a telephone line.

### 5.31 Lockout or disable:

This subclass is indented under subclass 5.3. Subject matter wherein the produced indicative signal causes a preventive condition of the operation of the controlled device (e.g., inaccessible or inoperative).

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 5.7 through 5.73, for access barrier  
5.74, for access to electrical information.

SEE OR SEARCH CLASS:

- 123, Internal Combustion Engines, subclass 179.4 for condition responsive control of starting device including automatic engine stop, subclass 333 for engine speed reduction for fuel cutoff.
- 180, Motor Vehicles, subclass 279 and 283 for circuit interruption of vehicle motor or ignition circuit for safety of the vehicle.
- 307, Electrical Transmission or Intercommunication Systems, subclasses 10.3 through 10.5 for vehicle ignition or starting circuit lock.
- 379, Telephonic Communications, subclasses 188 through 200 for call restriction from a particular station, or for alerting signal generation in response to a call or call attempt in violation of a call restriction.

### 5.32 Visual indication:

This subclass is indented under subclass 5.3. Subject matter wherein the produced indicative signal is visually perceptible.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 815.4 through 815.92, for specific visual indication communication system and method.

SEE OR SEARCH CLASS:

- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclass 117 for display indication of an unusual status (e.g., an alarm indication via an icon or a change in color based on an unusual condition, etc.).

### 5.33 Including link to a remote indicator:

This subclass is indented under subclass 5.3. Subject matter comprising means for communicating the produced indicative signal to a distant indicator.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 5.18, for plural controlled devices by input from a central location.
- 5.25 through 5.27, for wireless transceiver in a coded record input authorization control system.
- 5.28, for wireless transmitter in a coded record authorization control system.
- 531 through 539, for a condition responsive indicating system having particular link between sensing and indicating means.
- 541 through 567, for intrusion detection alarm.
- 568.1 through 572.9, for article placement or removal alarms.

SEE OR SEARCH CLASS:

- 49, Movable or Removable Closure, subclass 14 for closure condition indicator at remote station.
- 379, Telephonic Communications, subclass 106.01 for remote indicator over telephone line.



**5.4 Credit:**

This subclass is indented under subclass 5.2. Subject matter wherein a comparison is made with a balance in an individual's account so as to permit or deny immediate receipt of a desired product.

- (1) Note. Significant data processing system for credit transaction is excluded from this subclass. See search notes below.

**SEE OR SEARCH CLASS:**

- 235, Registers, subclasses 380 through 382.5 for credit card operated registers having significant card reading structure.
- 379, Telephonic Communications, subclasses 91.01 through 91.02 for credit authorization in a combined telephone system.
- 463, Amusement Devices: Games, subclass 25 for access or authorization (e.g., game selection, security, etc.) in a data processing game apparatus controlled by available credit.
- 705, Data Processing: Financial, Business Practice, Management, or Cost/ Price Determination, subclass 38 and 39-45 for a computer data processing for credit transaction system with insignificant communication feature.
- 902, Electronic Funds Transfer, appropriate subcollections for a cross-reference art collection of disclosures of fund transfer systems.

**5.41 Banking or financing:**

This subclass is indented under subclass 5.4. Subject matter wherein the desired product is associated with a business administration which plans the disposition or use of fund, security, extension of credit, or loan.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

825.26 through 825.27, for stock quotation.

**SEE OR SEARCH CLASS:**

- 235, Registers, subclass 379 for controlled data bearing record in a banking system.

- 705, Data Processing, Financial, Business Practice, Management, or Cost/ Price Determination, subclasses 35 through 45 for a computer data processing in a banking or financing application.

**5.42 Debiting (e.g., rental):**

This subclass is indented under subclass 5.4. Subject matter wherein an amount is subtracted from a positive balance to permit receipt of the desired product.

**SEE OR SEARCH CLASS:**

- 455, Telecommunications, subclass 409 for usage measurement for rental telephone.

**5.5 Input from central location for plural controlled devices:**

This subclass is indented under subclass 5.2. Subject matter wherein more than one device is being controlled by signal inputted from a central station.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 5.14, for a remote indicator of an improper access.
- 5.25 through 5.27, for coded record input device having wireless transceiver for remote control.
- 5.28, for coded record input device having wireless transmitter for remote control.

**SEE OR SEARCH CLASS:**

- 49, Movable or Removable Closures, subclasses 15 through 20 for jail type closure with remote control, subclass 24 for individually controlled closures with master control, subclass 25 for closure with radiant energy control, subclasses 29-30 for time controlled closure, subclass 31 for condition responsive control.
- 70, Locks, subclass 264 for central control, Dig 16 for jail door lock.
- 379, Telephonic Communications, subclass 102.02 for remote control of a device that has the primary function of receiving or transmitting information.

**5.51 Manual code input:**

This subclass is indented under subclass 5.2.  
Subject matter wherein the information bearing signal is generated by input from a user.

- (1) Note. The input may includes, for example, information picked up from a device worn by a user, or user input information, etc.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 5.22, for authorization control in which control code is programmed.  
5.26, for authorization control wherein control code is varied by rotating or scrambling technique.  
5.6, for authorization by coded record input (e.g., IC card or key).

SEE OR SEARCH CLASS:

- 341, Coded Data Generation or Conversion, appropriate subclasses for code converter, code generator, or code transmitter system or method per se, particularly subclasses 22 through 34 for bodily actuated code generator including keyboard or keypad.

**5.52 Biometrics:**

This subclass is indented under subclass 5.51.  
Subject matter wherein the information bearing signal is generated from data specific to a user's body.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 5.82 through 5.84, for an authentication system in which body characteristic is used for verification or identification.

SEE OR SEARCH CLASS:

- 382, Image Analysis, subclasses 115 through 127 for personal identification including biometrics.  
704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 246 through 250 for voice recognition, subclass 273 for speech signal processing in a security system.

- 902, Electronic Funds Transfer, subclass 3 for electronic funds transfer system having means for analyzing physical characteristic of user (e.g., fingerprint, handprint).

**5.53 Image (e.g., fingerprint , face):**

This subclass is indented under subclass 5.52.  
Subject matter wherein the data specific to a user's body is a pattern picturing a part of the user's body.

- (1) Note. The pattern, can be a digital representation of the body part.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 5.4, for an authentication system in which image of user body characteristic is used for verification or identification.

SEE OR SEARCH CLASS:

- 382, Image Analysis, subclass 115 for image or pattern analyzing for recognizing a person.

**5.54 Password:**

This subclass is indented under subclass 5.51.  
Subject matter wherein the information bearing signal comprises user identification code for security purpose.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 5.85, for an authentication system in which user identification number is used for verification or identification

SEE OR SEARCH CLASS:

- 700, Data Processing: Generic Control Systems or Specific Applications: subclass 225 for data processing article handling system having identification code, subclasses 221-222 for identification code in a plural articles handling data processing system; subclass 237 for password authorization in a computerized dispensing or vending apparatus.  
705, Data Processing: Financial, Business Practice, Management, or Cost/ Price Determination, subclass 18 for a point of sale terminal having security or

- user identification provision (password entry, etc.).
- 711, Electrical Computers and Digital Processing Systems: Memory, subclass 164 for memory access control by password or key.
- 713, Electrical Computers and Digital Processing Systems: Support, subclass 202 for security in computer using password
- 902, Electronic Funds Transfer, subclass 5 for electronic funds transfer having means to enter personal identification numbers.
- 5.55 Rotary input:**  
This subclass is indented under subclass 5.51. Subject matter wherein the information bearing signal comprises input from a dial or code wheel mechanism.
- SEE OR SEARCH CLASS:
- 70, Locks, subclass 278.4 for lock with dial input
- 341, Coded Data Generation or Conversion, subclass 35 for bodily actuated code generator with rotary dial, subclass 192 for code generator or transmitter with rotary distributor.
- 5.6 Coded record input (e.g., IC card or key):**  
This subclass is indented under subclass 5.2. Subject matter wherein the information bearing signal is generated from coded data stored in a data bearing record or carrier.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 5.22 through 5.25, for varying authorization by code learning having coded record.
- 5.26, for varying authorization by code rotating or scrambling.
- 5.51 through 5.55, for authorization control by manual code input.
- SEE OR SEARCH CLASS:
- 49, Movable or Removable Closures, subclass 35 for check or key controlled closure.
- 70, Locks, subclass 278,2-278.3 and subclasses 284-285 for key controlled lock.
- 235, Registers, subclasses 380 through 382.5 for identification card operated registers having significant card reading structure.
- 5.61 Wireless transceiver:**  
This subclass is indented under subclass 5.6. Subject matter comprising a transmitter-receiver device for exchanging information over free space.
- (1) Note. The free space is a medium that is not a wire or wave-guide.
- (2) Note. For similar subject matter having only one way communication of data. See search notes below.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 5.33, for a remote indicator of an improper access.
- 5.5, for plural controlled devices by input from a central location.
- 5.64, for coded record input device authorization control system including wireless transmitter
- 10.1 through 10.6, for interrogation-response system.
- 572.1 through 572.7, for security tags.
- SEE OR SEARCH CLASS:
- 341, Coded Data Generation or Conversion, subclass 176 for code generator or transmitter in which the transmitter produces a signal for control of a remotely located device.
- 5.62 Including manual switching means:**  
This subclass is indented under subclass 5.61. Subject matter comprising a make and break device actuated by user input for
- (1) Note. The user input can include proximity detection.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 541 through 567, for intrusion detection.
- SEE OR SEARCH CLASS:
- 341, Coded Data Generation or Conversion, subclasses 20 through 35 for bodily actuated code generator.

**5.63 Including timing means (e.g., clock):**

This subclass is indented under subclass 5.61. Subject matter wherein the exchange of information is initiated by a timing or clock signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.28, for time access blocking.

SEE OR SEARCH CLASS:

70, Locks, subclasses 272 through 274 and Dig. 45 for locks with clock control.  
368, Horology: Time Measuring Systems or Devices, appropriate subclasses.  
455, Telecommunications, subclass 171.1 and 181.1 with time actuated or time controlled receiver for locks with clock control, subclass 231 for lock with local control of receiver operation at specific time intervals.

**5.64 Wireless transmitter:**

This subclass is indented under subclass 5.6. Subject matter comprising a transmission device for sending information over free space

(1) Note. Free space is a medium which is not a wire or wave-guide.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.33, for a remote indicator of an improper access.  
5.5, for plural controlled devices by input from a central location.  
5.61 through 5.63, for coded record input device authorization control system including wireless transceiver.  
825.69 and 825.72, for selective control responsive to wireless signal.

SEE OR SEARCH CLASS:

123, Internal Combustion Engines, subclass 179.2 for remote control of starting device.  
318, Electricity: Motive Power Systems, subclass 16 for radio controlled motors.  
341, Coded Data Generation or Conversion, subclass 176 for code generator or transmitter in which the transmitter

produces a signal for control of a remotely located device.

**5.65 Electronic coded record:**

This subclass is indented under subclass 5.6. Subject matter comprising details of electronic circuitry or data processing means of a card or key.

SEE OR SEARCH CLASS:

70, Locks, Dig. 46 for conducting key.  
235, Registers, subclasses 441 through 443 for electric contact sensors, subclass 492 for conductive records.  
257, Active Solid-State Devices (e.g., Transistors, Solid-State Diodes) subclass 679 for smart card package.

**5.66 Magnetic coded record:**

This subclass is indented under subclass 5.6. Subject matter comprising details of magnetic element (e.g., magnetic card key decoder, magnetic card key, etc.) of a card or key.

SEE OR SEARCH CLASS:

235, Registers, subclasses 449 through 450 for magnetic sensors, subclass 493 for magnetic records.

**5.67 Mechanical coded record:**

This subclass is indented under subclass 5.6. Subject matter comprising details of mechanical structure (e.g., mechanical key, mechanical key decoder, etc.) of a card or key.

(1) Note. System with significant mechanical lock structure is excluded from this subclass. See search notes below.

SEE OR SEARCH CLASS:

70, Locks, subclasses 278.2 through 278.3 and subclasses 284-285 for key controlled lock, subclasses 336-340 for key operated locks.  
235, Registers, subclasses 444 through 448 for electromechanical sensor, subclass 453 for mechanical sensor, subclasses 458-460 for optical sensing of perforated record, subclass 489 for perforated record.

**5.7 Access barrier:**

This subclass is indented under subclass 5.2. Subject matter wherein the action performed is

a control of an element for opening or closing an entrance.

- (1) Note. The element includes, for example, a door.

**SEE OR SEARCH CLASS:**

- 49, Movable or Removable Closures, appropriate subclasses, subclasses 15 through 20 for jail type closures with similar latching devices.
- 52, Static Structures (e.g., Buildings), for closures and related structure provided in that class
- 53, Package Making, subclasses 329 through 366 for package structure having closure securing means.
- 70, Locks, subclass 271 for operating mechanism of time controlled electric lock, and subclasses 277-283.1 for operating mechanism of electric locks.
- 105, Railway Rolling Stock, appropriate subclasses for closures associated with both passenger and freight cars
- 109, Safes, Bank Protection, or a Related Device, subclasses 6 through 8 for plural closures used as a trapping mechanism, subclasses 11-18 for a protective shield movable from a retracted position to an operative position, and subclasses 64 -77 for a movable closure combined with a safe or like structure.
- 187, Elevator, Industrial Lift Truck, or Stationary Lift for Vehicle, subclasses 313 through 335 for a barrier in combination with other elevator structure which regulates access to or from an elevator car and subclasses 336.
- 292, Closure Fasteners, subclass 144, 201, 341.16 for various type of fasteners with motors, subclass 342 for means for closing an elevator shaft opening through a landing.
- 342, Railway Rolling Stock, appropriate subclasses for closures associated with both passenger and freight cars
- 361, Electricity: Electrical Systems and Devices, subclass 172 for code responsive operated relays or solenoids.

- 379, Telephonic Communications, subclass 102.06 for remote control over telephone line for permitting or preventing physical entrance or exit lock.

**5.71 Garage door:**

This subclass is indented under subclass 5.32. Subject matter wherein the element is a vehicle gate.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 5.64, for authorization control using wireless transmitter.

**SEE OR SEARCH CLASS:**

- 70, Locks, dig. 11 for garage door locks.
- 318, Electricity Motive Power Systems, subclass 16 for radio controlled motors.

**5.72 Vehicle door:**

This subclass is indented under subclass 5.7. Subject matter wherein the element is an automotive door.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 5.31, for vehicle disabling due to improper access.
- 5.64, for authorization control using wireless transmitter.

**SEE OR SEARCH CLASS:**

- 70, Locks, subclasses 237 through 260 for vehicle locks.
- 180, Motor Vehicles, subclasses 287 through 290 for preventing unauthorized access of motor vehicle.
- 296, Land Vehicles: Bodies and Tops, particularly subclasses 146.1 through 146.10 for doors and windows.
- 307, Electrical Transmission or Interconnection Systems, subclasses 10.1 through 10.5 for automotive anti-theft system.
- 701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 49 for vehicle equipment position control (e.g., seat, mirror, door, window, headrest or headlamp).

**5.73 Lockbox:**

This subclass is indented under subclass 5.7.  
Subject matter wherein the element is for a safety deposit box .

- (1) Note. This subclass includes real estate lock boxes.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

542, for detection of unauthorized or improper operation of locking device.

SEE OR SEARCH CLASS:

- 70, Lock, appropriate subclasses for mechanisms associated with locks or their operating features, particularly subclass 63 for receptacles.  
109, Safes, Bank Protection, or a Related Device, subclasses 45 through 49 for safety deposit boxes and their compartments.  
222, Dispensing, subclasses 153.01 through 153.14 for locks combined with dispensing devices.

**5.74 Access to electrical information:**

This subclass is indented under subclass 5.2.  
Subject matter wherein the individual is authorized to obtain information or data signal.

- (1) Note. This subclass excludes significant computer for data processing for access control. See search class notes below.

SEE OR SEARCH CLASS:

- 360, Dynamic Magnetic Information Storage or Retrieval, subclass 60 for preventing recording or erasing an earlier recording on a record carrier.  
380, Cryptography, subclasses 201 through 209 for copy protection or prevention of video signal by cryptography.  
439, Electrical Connectors, subclasses 133 through 134 for unauthorized connection prevention.  
455, Telecommunications, subclass 26.1 for use or access blocking of a modulated carrier wave communication in general and subclass 411 for radio-telephone with privacy or lockout.  
463, Amusement Devices: Games, subclass 29 for access or authorization.

- 705, Data Processing: Financial , Business Practice, Management, or Cost/Price Determination, subclasses 50 through 80 for business cryptography.  
708, Electrical Computers: Arithmetic Processing and Calculating, subclass 135 for security.  
707, Data Processing: Database and File Management, Data Structures, or Document Processing, subclasses 1 through 206 for database or file management systems including significant addressing, retrieval, or manipulation of information contained within a database of a digital data processing system or computer including searching, query processing, information locating and retrieval techniques from a file or database.  
711, Electrical Computers and Data Processing Systems: Memory, subclasses 100 through 173 for storage accessing and control, subclass 163 for access limiting and subclass 164 for access with password or key.  
713, Electrical Computers And Digital Processing Systems: Support, subclasses 182 through 186 for system access control based on user identification by cryptography, subclasses 200-202 for security.

**5.8 Authentication (e.g., identity):**

This subclass is indented under subclass 5.1.  
Subject matter which compares characteristics or data to determine proper validation of a user, object, or document.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 5.1 through 5.92, for similar subject matter in authorization systems.

SEE OR SEARCH CLASS:

- 235, Registers, subclass 380 for identification card systems where the card is a data bearing record.  
342, Communications: Directive Radio Wave Systems And Devices (e.g., Radar, Radio Navigation), subclasses 44 through 45 for identification system.  
348, Television, subclass 161 for the remote verification of signatures

- using television and having an operator making a decision as to the authenticity of the signature, where a television system is an integral part of the system.
- 356, Optics: Measuring and Testing, subclass 71 for optical document verification.
- 380, Cryptography, subclasses 23 through 25 for an authentication system using encrypted transmission.
- 399, Electrophotography, subclass 12 for unit or part identification.
- 705, Data Processing, Financial, Business Practice, Management, or Cost/ Price Determination, subclass 44 for a computerized arrangement for transferring funds by debiting one account and crediting another by the same amount in which an approval is required prior to effecting a funds transfer, or subclass 67 for secure transaction cryptographic processing (e.g., EFT/ POS) including authentication.
- 713, Electrical Computers and Digital Processing Systems: Support, subclasses 155 through 159 for multiple computer communication using cryptography having central trusted authority providing computer authentication, subclass 161 for multiple computer communication using cryptography where packet header denotes cryptographically protected data and having data authentication, and subclasses 168-181 for multiple computer communication using cryptography having particular communication authentication technique.

#### 5.81 Personal identification:

This subclass is indented under subclass 5.8. Subject matter wherein identity of an individual is validated.

- (1) Note: This subclass usually pertains to system which identify an individual, and the controlled function is generally an indication of the authenticity.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 5.3 through 5.33, for authorization control with indication of improper access

SEE OR SEARCH CLASS:

- 283, Printed Matter, subclasses 75 through 78 for personal identification.
- 382, Image Analysis, subclasses 115 through 127 for image analyzing for the purpose of recognizing an individual or verifying a person's identity.
- 434, Education and Demonstration, subclass 155 for identification of person or handwriting analysis.

#### 5.82 Biometrics:

This subclass is indented under subclass 5.81. Subject matter wherein body characteristic is used to validate the identity of the individual.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 5.52 through 5.53, for authorization system controlled by body characteristic.

SEE OR SEARCH CLASS:

- 348, Television, subclass 77 for television system adapted for human body observation.
- 382, Image Analysis, subclasses 115 through 127 for personal identification including biometrics.
- 396, Photography, subclasses 14 through 18 for eye, mouth or body photography.
- 902, Electronic Funds Transfer, subclass 3 for electronic funds transfer system having means for analyzing physical characteristic of user (e.g., fingerprint, handprint).

#### 5.83 Image (e.g., Fingerprint, Face):

This subclass is indented under subclass 5.82. Subject matter wherein the body characteristic includes pattern picturing part of the individual's body.

- (1) Note. The pattern picturing part of body may be a digital representation.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

5.53, for authorization system controlled by image (e.g., fingerprint, face).

SEE OR SEARCH CLASS:

382, Image Analysis, subclass 115 for image or pattern analyzing for recognizing a person.

#### 5.84 Voice:

This subclass is indented under subclass 5.82. Subject matter wherein the body characteristic includes the individual's speech

SEE OR SEARCH CLASS:

381, Electrical Audio Signal Processing Systems and Devices, appropriate subclasses for electrical transmission or processing systems for audio signals.

704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 246 through 250 for voice recognition and subclass 273 for security systems including speech signal processing.

#### 5.85 Password:

This subclass is indented under subclass 5.81. Subject matter wherein the characteristic includes user identification code for security purpose.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

5.54, for authorization system controlled by password.

SEE OR SEARCH CLASS:

700, Data Processing: Generic Control Systems or Specific Applications: subclass 225 for data processing article handling system having identification code, subclasses 221-222 for identification code in a plural articles handling data processing system; subclass 237 for password authorization in a computerized dispensing or vending apparatus.

705, Data Processing: Financial, Business Practice, Management, or Cost/ Price Determination, subclass 18 for a point of sale terminal having security or user identification provision (password entry, etc.).

711, Electrical Computers and Data Processing Systems: Memory, subclass 164 for memory access control by password or key.

713, Electrical Computers and Data Processing Systems: Support, subclass 202 for security in computer using password.

902, Electronic Funds Transfer, subclass 5 for electronic funds transfer having means to enter personal identification numbers.

#### 5.86 Document authentication:

This subclass is indented under subclass 5.8. Subject matter wherein validity of a document is determined.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 559.01 through 559.49 for optical inspection of webs.

270, Sheet-Material Associating, appropriate subclasses for document handling subject matter.

271, Sheet Feeding or Delivering, appropriate subclasses for related subject matter.

358, Facsimile and Static Presentation Processing, subclass 488 for system in which the position of a document relative to a platen or scanning apparatus is detected.

380, Cryptography, subclasses 23 through 25 for record actuated authentication system.

382, Image Analysis, subclass 112 for imaging system that inspect webs, such as newspaper, etc., for proper registration of the print thereon or for inspection of the condition of a document for damage (e.g. staining, soiling) to the document.

399, Electrophotography, subclass 366 for document handling of unauthorized copy prevention.



- 713, Electrical Computers and Digital Processing Systems: Support, subclasses 150 through 181 for multiple computer communication using cryptography.

### 5.9 Commodity (e.g., vending):

This subclass is indented under subclass 5.1.  
Subject matter providing for a receipt, dispensation or count of a merchandise.

#### SEE OR SEARCH CLASS:

- 70, Locks, Dig 41 for coin controlled locks.
- 186, Merchandising, subclass 3 for store service with selective delivery, subclass 20 for store service with selective switches, subclasses 55-56 for store service with remote item dispensing.
- 235, Registers, subclass 381 for vending controlled by a data bearing record.
- 221, Article Dispensing, appropriate subclass, in particular subclasses 2 through 8 for article dispensing device having recorder, register, indicator, signal or exhibitor.
- 222, Dispensing, appropriate subclass, in particular subclasses 23 through 51 dispensing process including record, register, indicator or exhibitor.
- 700, Data Processing: Generic Control Systems or Specific Applications; subclass 237 for password authorization in a computerized dispensing or vending apparatus
- 705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclasses 16 through 25 for vending combined with a cash or credit transaction.

### 5.91 Including merchandise information display system (e.g., store price display):

This subclass is indented under subclass 5.9.  
Subject matter comprising means for visually indicating an information related to the merchandise (e.g., price).

#### SEE OR SEARCH CLASS:

- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, appropriate subclasses for computer graphic

processing, interfacing, or type of display system.

- 705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclass 20 for price look up including price display in a point of sale terminal and subclasses 400-418 for cost/price determination.
- 708, Electrical Computers: Arithmetic Processing and Calculating, subclass 163 for a business calculator having specialized output.

### 5.92 Item inventorying:

This subclass is indented under subclass 5.9.  
Subject matter includes an arrangement for establishing, maintaining, or updating a record of the merchandise.

- (1) Note. An inventory system having significant data processing is classified in an external class. See search class notes below.

#### SEE OR SEARCH CLASS:

- 235, Registers, subclass 385 for system controlled by data bearing record in which a record associated with or representative of an article is sensed, and sensed data is used to compile a record of items on hand.
- 700, Data Processing: Generic Control Systems or Specific Applications: subclass 225 for data processing article handling system having identification code, subclass 236 for article handling inventory in a data processing system.
- 705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclass 22 for inventory monitoring in a point of sale terminal, subclasses 28-29 inventory management in a generic business system.

### 7.1 Paging to control diverse device:

This subclass is indented under subclass 825.36. Subject matter wherein a control signal provides commands to control a device in addition to providing a paging indication to a user.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 5.1 through 5.92, for control in response to an information bearing item, particularly security related control, subclass 825.37 for selective control in addition to indication or alarm, and subclasses 7.2-7.63 for selective paging systems including 7.33-7.36 for power control or battery saving of a selective paging device based on a received signal.

## **7.2 Code responsive (i.e., paging):**

This subclass is indented under subclass 825.36. Subject matter wherein the indication at a selective call receiver (SCR) is controlled or actuated in accordance with a predetermined control signal.

- (1) Note. These systems are generally characterized by terminals which receive requests for indication (and organize those requests) and transmitter base stations which communicate such a request in the form of a predetermined control signal to a selective call receiver (SCR).
- (2) Note. A paging signal generally is the communication between a transmitter base station and an SCR.
- (3) Note. SCRs are also known as pagers, paging receivers, or beepers etc.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 7.1, for paging to control diverse device.  
311.2, for nonselective call paging (e.g. public address system).

SEE OR SEARCH CLASS:

- 370, Multiplex Communications, subclasses 310 through 350 for multiplex communication over free space, particularly subclasses 313-314 for specific multiplex communication including a portable address responsive receiver.
- 375, Pulse or Digital Communications, appropriate subclasses for a paging device combined with a digital communication system.

- 379, Telephonic Communications, subclass 88.15 for telephonic communication including audio message storage, retrieval, or synthesis having multimedia system pager activation and FOR 101 for an art collection related to telephonic communication having electromagnetic link for speech or paging signal (e.g., light wave link).

- 455, Telecommunications, particularly foreign /nonpatent literature of subclasses 701 through 703 for similar subject matter involving tone coded squelch and subclass 228 for a telecommunications receiver combined with a paging device.

## **7.21 Two-way paging:**

This subclass is indented under subclass 7.2.

Subject matter wherein the SCR may additionally transmit information back to the paging terminal.

- (1) Note. The information transmitted from the SCR to the paging terminal generally is relayed in some manner through the transmitter base station. Ack-Back pagers and Reply pagers are classified here.

## **7.22 Acknowledgment of message receipt:**

This subclass is indented under subclass 7.21.

Subject matter wherein the response from the pager is an indication that a paging signal has been received by the paging terminal.

## **7.23 Including reply to query:**

This subclass is indented under subclass 7.22.

Subject matter wherein the response from the pager is an answer to a question posed in the paging signal received by the paging terminal.

## **7.24 Transmitting configuration:**

This subclass is indented under subclass 7.2.

Subject matter wherein a specific transmitter base station arrangement is used to relay the control signal from the paging terminal to the SCR.

## **7.25 Multiple transmitters:**

This subclass is indented under subclass 7.24.

Subject matter wherein a plurality of transmitter base stations are used to communicate the control signal to the SCR.

**7.26 Simulcast:**

This subclass is indented under subclass 7.25. Subject matter wherein the plurality of transmitter base stations are synchronized to transmit the same control signal at the same time.

**7.27 Zoned:**

This subclass is indented under subclass 7.25. Subject matter wherein each of a plurality of transmitter base stations is arranged to cover a specific geographical area.

**SEE OR SEARCH CLASS:**

- 370, Multiplex Communications, subclasses 328 through 338 for multiplex communication over free space involving plural contiguous regions.
- 455, Telecommunications, subclasses 422 through 460 for zoned or cellular telephone systems.

**7.28 Paging terminal (i.e., element prior to the transmitter):**

This subclass is indented under subclass 7.2. Subject matter wherein a specific interface between the requesting user and the transmitter base station is used to organize requests and control signals.

**7.29 Terminal connected to other network (e.g., Internet):**

This subclass is indented under subclass 7.28. Subject matter wherein the paging terminal receives requests for indication from a communication system other than just the PSTN.

**SEE OR SEARCH CLASS:**

- 379, Telephonic Communications, subclasses 90.01 through 108.02 for a telephone system combined with diverse electrical system or signaling.
- 709, Electrical Computers and Digital Processing Systems: Multiple Computer or Process Coordinating, subclasses 200 through 253 for plural computer communications.

**7.3 Queuing:**

This subclass is indented under subclass 7.28. Subject matter wherein the paging terminal effects the order in which received requests are sent as paging messages to the SCRs.

**7.31 Message input:**

This subclass is indented under subclass 7.28. Subject matter wherein the paging terminal includes devices which are used to generate paging messages based upon received requests.

**7.32 Power control or battery saving:**

This subclass is indented under subclass 7.2. Subject matter wherein the SCR's power consumption is regulated or reduced.

**SEE OR SEARCH CLASS:**

- 323, Electricity: Power Supply or Regulation Systems, appropriate subclasses for generic power supply regulation.
- 370, Multiplex Communications, subclass 311 for multiplex signaling for performing battery saving.
- 455, Telecommunications, subclass 127 for power supply of transmitter, subclass 343 for power supply of receiver, and subclasses 572-574 for power supply of radiotelephone.
- 713, Electrical Computers and Digital Processing Systems: Support, subclasses 300 through 340 for computer power control.

**7.33 Based on received signal:**

This subclass is indented under subclass 7.32. Subject matter wherein the SCR's power consumption is regulated or reduced in response to a received signal.

**7.34 Frame based timing:**

This subclass is indented under subclass 7.33. Subject matter wherein the power control circuit in the SCR operates in response to timing information derived from received packetized data.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 7.45, for paging address format in general.

**7.35 Address based:**

This subclass is indented under subclass 7.33. Subject matter wherein the power control circuit in the SCR operates in response to its identifier in a received control signal.

- 7.36 Received signal includes power command:**  
This subclass is indented under subclass 7.32.  
Subject matter wherein the received signal includes an instruction to the SCR's power saving circuit.
- 7.37 Control based upon available power:**  
This subclass is indented under subclass 7.32.  
Subject matter wherein the SCR's power consumption is regulated or reduced in response to the amount of power remaining in the SCR's power supply.  
  
SEE OR SEARCH THIS CLASS, SUBCLASS:  
636, for battery condition responsive indicating system.
- 7.38 Time based:**  
This subclass is indented under subclass 7.32.  
Subject matter wherein the power control circuit in the SCR is responsive to a fixed time schedule.
- 7.39 Programming the receiver:**  
This subclass is indented under subclass 7.2.  
Subject matter wherein a control signal which can be used by the SCR to effect the future operation of the SCR is supplied thereto.
- 7.4 Via local device:**  
This subclass is indented under subclass 7.39.  
Subject matter wherein the programming control signal is delivered to the SCR from a nearby device.
- 7.41 Over the air:**  
This subclass is indented under subclass 7.39.  
Subject matter wherein the programming control signal is delivered to the SCR via the same communication system as the indication control signals.
- 7.42 Frequency scanning for address:**  
This subclass is indented under subclass 7.2.  
Subject matter wherein the SCR scans plural frequencies in search of a message to itself.  
  
SEE OR SEARCH CLASS:  
455, Telecommunications, subclass 434 for cellular access channel scanning.
- 7.43 Particular message and address format (e.g., POCSAG, FLEX, etc.):**  
This subclass is indented under subclass 7.2.  
Subject matter wherein a specific protocol is used to communicate a control signal and selecting code.  
  
SEE OR SEARCH THIS CLASS, SUBCLASS:  
7.45, for particular addressing format.  
  
SEE OR SEARCH CLASS:  
341, Coded Data Generation or Conversion, appropriate subclasses for various types of conversion between codes.
- 7.44 Having error detection or correction:**  
This subclass is indented under subclass 7.43.  
Subject matter wherein an error in the communication of the control signal is detected which may be subsequently corrected.  
  
(1) Note. Error correction and error indication are classified here.  
  
SEE OR SEARCH CLASS:  
714, Error Detection/Correction and Fault Detection/Recovery, appropriate subclasses for generic error detection or correction.
- 7.45 Addressing format:**  
This subclass is indented under subclass 7.2.  
Subject matter wherein a specific selecting code is used to direct a control signal to a specific SCR.  
  
SEE OR SEARCH THIS CLASS, SUBCLASS:  
7.34, for power control or battery saving based on address, subclasses 7.43-7.44 for particular message and address format, and subclasses 825.52-825.53 for selective addressing in general.
- 7.46 Group call:**  
This subclass is indented under subclass 7.45.  
Subject matter including plural SCRs each actuated by a signal unique thereto, and each also responsive to a signal which actuates a plurality of SCRs.

- (1) Note. The group call signal may actuate all or a subset of SCRs in the system.
- 7.47 Source address:**  
This subclass is indented under subclass 7.46. Subject matter wherein plural indicating devices realize that a message is intended for each indicating device based on a code which designates the sender of the message to be indicated.
- 7.48 News information provider (e.g., sports, weather, etc.):**  
This subclass is indented under subclass 7.46. Subject matter wherein the user requesting the indication sends or initiates a control signal which indicates the status of a particular news-worthy subject.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
825.26 through 825.27, for selective stock quotation.
- 7.49 Tone code (i.e., frequency code):**  
This subclass is indented under subclass 7.45. Subject matter wherein the control signal is a predetermined pattern of successive audio frequency modulated signals.
- (1) Note. The successive signals may include one or more frequencies, but a single modulated signal is not classified herein.
- SEE OR SEARCH CLASS:  
375, Pulse or Digital Communications, subclass 239 for pulse frequency modulation communication.
- 7.5 Distress signal:**  
This subclass is indented under subclass 7.2. Subject matter responsive to the receipt of signals having standardized characteristics representing an emergency type situation from any transmitter.
- (1) Note. The signals are often indications of nautical vessels in distress, such as the "SOS" or standard international distress signal.
- 7.51 Message presentation:**  
This subclass is indented under subclass 7.2. Subject matter wherein the indication is a perceptible announcement of information.
- (1) Note. Paging alerts are classified elsewhere.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
7.58 through 7.62, for paging alerts.
- SEE OR SEARCH CLASS:  
345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, appropriate subclasses for computer graphics display processing.
- 7.52 Storing or retrieving message (e.g., received message database handling):**  
This subclass is indented under subclass 7.51. Subject matter wherein the message is saved in a memory area for future recall.
- (1) Note. Handling or searching stored messages is classified here.
- SEE OR SEARCH CLASS:  
707, Data Processing: Database and File Management, Data Structures, or Document Processing, appropriate subclasses for generic database management.
- 7.53 Canned message (audible or visual):**  
This subclass is indented under subclass 7.51. Subject matter wherein a message is communicated in the control signal using a code representing the message (or a portion thereof).
- 7.54 Via externally coupled device:**  
This subclass is indented under subclass 7.51. Subject matter wherein the message is presented via a separate device connected to the SCR.
- 7.55 Display:**  
This subclass is indented under subclass 7.51. Subject matter wherein the message is presented via a visual element.

## SEE OR SEARCH CLASS:

345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, appropriate subclasses for a selective visual display in general.

**7.56 Including graphics:**

This subclass is indented under subclass 7.55. Subject matter wherein the displayed message includes a pictorial image.

(1) Note. Graphics here include icons.

## SEE OR SEARCH CLASS:

345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, appropriate subclasses for computer graphics.

**7.57 Audible:**

This subclass is indented under subclass 7.51. Subject matter wherein the message is presented using a sound producing element.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

7.62, for an audible paging alert.  
384.1 through 404.3, for an electrical audible indicator in general.

## SEE OR SEARCH CLASS:

381, Electrical Audio Signal Processing Systems and Devices, appropriate subclasses for audio signal processing in general.

**7.58 Alert:**

This subclass is indented under subclass 7.2. Subject matter including a humanly perceptible indication that a specific control signal has been received.

**7.59 Priority alert:**

This subclass is indented under subclass 7.58. Subject matter wherein the alert is indicative of the order of importance of the received control signal.

**7.6 Vibratory (i.e., tactual) alarm:**

This subclass is indented under subclass 7.58. Subject matter wherein the indicating element

produces a shaking vibration which is felt rather than heard.

(1) Note. The vibration is generally in the subaudible range.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

407.1 through 407.2, for tactual signals, per se.

**7.61 Visual:**

This subclass is indented under subclass 7.58. Subject matter wherein the alert indicating element produces a visible indication.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

815.4 through 815.92, for electrical visual indicators in general.

**7.62 Audible:**

This subclass is indented under subclass 7.58. Subject matter wherein the alert indicating element produces a noise that is heard.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

7.57, for audible paging message presentation.  
384.1 through 404.3, for electrical audible indicators in general.

**7.63 Housing detail:**

This subclass is indented under subclass 7.2. Subject matter wherein a specific structure encases the SCR.

## SEE OR SEARCH CLASS:

361, Electricity: Electrical Systems and Devices, subclasses 814 through 815 for radio type housings.  
455, Telecommunications, subclass 90 for a telecommunication transceiver housing, subclass 128 for a telecommunication transmitter housing, and subclasses 347-351 for a telecommunication receiver housing.

**10.1 Interrogation response:**

This subclass is indented under 825. having an information containing device and an information source control device for querying the

information containing device, with the expectation of an immediate reply.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 3.51, for selective monitoring and control including addressing with polling or roll call.
- 505, for interrogator-responder in a condition responsive indicating system with particular system function.
- 572.1 through 572.9, for condition responsive detecting a detectable device on a protected article.
- 825.26, and 825.27, for such subject matter for interrogation and display of stock prices.
- 825.28, and 825.29, for such subject matter for interrogation and display of space allocation information.
- 825.31 through 825.33, for transponders used for access control.
- 825.44 through 825.48, for two-way paging in selective communications.
- 870.28, and 870.29, for continuously variable indicating via radiant energy, and subclass 870.32 via mutual inductance.

SEE OR SEARCH CLASS:

- 235, Registers, subclasses 375 through 386 for systems controlled by data bearing records which may include interrogation response system or device.
- 342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 42 through 51 for transponder system using radar.
- 455, Telecommunications, subclass 41 for near field communication and subclass 106 for modulation by absorption, shielding, or reflecting.

## 10.2 **Contention avoidance:**

This subclass is indented under 10.1. including means to enable an interrogation controller to receive responses from multiple information containing devices relatively error free.

SEE OR SEARCH CLASS:

- 370, Multiplex Communications, subclasses 229 through 240 for data flow congestion prevention or control in a multiplex communications network.

## 10.3 **Interrogation signal detail:**

This subclass is indented under 10.1. wherein an interrogation signal having designated characteristics is sent from the source controller.

### 10.31 **Individual call:**

This subclass is indented under 10.3. wherein the interrogation signal uniquely identifies a specific information containing device.

### 10.32 **Group call:**

This subclass is indented under 10.3. wherein the interrogation signal identifies a group of information containing devices.

### 10.33 **Wake up (all call):**

This subclass is indented under 10.3. wherein the specific interrogation signal initiates a response from all information containing devices within range.

### 10.34 **Power up:**

This subclass is indented under 10.3. wherein the interrogation signal provides energy to all information containing devices.

## 10.4 **Response signal detail:**

This subclass is indented under 10.1. wherein a specific response signal is sent from the information containing device.

### 10.41 **Combination response:**

This subclass is indented under 10.4. wherein the response signal is a composite signal including multiple type of information.

### 10.42 **Identification only:**

This subclass is indented under 10.4. wherein the response signal includes the unique identity of the information containing device.

## 10.5 **Additional control:**

This subclass is indented under 10.1. wherein a subsequent operation is performed in response to the interrogation signal.

### 10.51 **Programming (e.g., read/write):**

This subclass is indented under 10.5. wherein the subsequent operation is the writing of data into the information containing device.

**10.52 ID code:**

This subclass is indented under 10.51. wherein the data written is a unique identification of the information containing device.

**10.6 Printout or display:**

This subclass is indented under 10.1. including an information presenting device for forming a permanent or semipermanent record of the information.

**14.1 Decoder matrix:**

This subclass is indented under subclass 825. Subject matter having a two or more dimensional array of electrical elements in a receiver for distinguishing different control signals, and not elsewhere classifiable.

- (1) Note. Switching systems including nonlinear saturable reactor (e.g., magnetic core) switching are classified elsewhere.
- (2) Note. Information storage systems including nonlinear saturable reactors (e.g., magnetic cores) are classified elsewhere.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 2.2 through 2.31, for a channel selecting matrix.

SEE OR SEARCH CLASS:

- 307, Electrical Transmission and Interconnection Systems, subclasses 401 through 424 for switching systems including nonlinear saturable reactor (e.g., magnetic core) switching.
- 326, Electronic Digital Logic Circuitry, subclasses 105 through 108 for a logic decoder which is a function of AND, OR, NAND, NOR, or NOT.
- 341, Coded Data Generation or Conversion, appropriate subclasses for the production or converting of a code.
- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclass 55 for a selectively actuated display matrix.
- 365, Static Information Storage and Retrieval, subclasses 129 through 188 for information storage systems

including nonlinear saturable reactors (e.g., magnetic cores).

- 706, Data Processing: Artificial Intelligence: subclasses 15 through 44 for neural networks.
- 710, Electrical Computers and Digital Data Processing Systems: Input/Output, subclasses 100 through 132 for system intraconnecting, and particularly subclasses 131-132 for path selection and switching (e.g., crossbar switching) in a digital data processing system.
- 711, Electrical Computers and Digital Processing Systems: Memory, subclasses 200 through 221 for generalized address forming.

**14.2 Plural stage:**

This subclass is indented under subclass 14.1. Subject matter wherein each element of the matrix is itself a matrix.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 2.21 through 2.24, for plural stage channel selecting matrix, and subclass 2.6 for plural stage path selection in general.

**14.3 Programmable:**

This subclass is indented under subclass 14.1. Subject matter wherein the array or an element thereof has a settable signal response in accordance with a programmed or other setting by an operator.

SEE OR SEARCH CLASS:

- 257, Active Solid-State Devices (e.g., Transistors, Solid-State Diodes) subclass 209 for programmable path active solid-state gate array, and subclasses 529-530 for integrated circuit structure with programmable passive component.
- 326, Electronic Digital Logic Circuitry, subclasses 37 through 50 for programmable logic circuitry.
- 341, Coded Data Generation or Conversion, subclass 78 for a programmable digital to digital converter.



- 365, Static Information Storage and Retrieval, appropriate subclass for electromagnetic storage systems, and subclasses 185.01 through 185.33 for floating gate memory storage (e.g., flash memory).
- 716, Data Processing: Design and Analysis of Circuit or Semiconductor Mask, subclass 17 for programmable IC circuit design.
- 14.31 Having fusible element:**  
This subclass is indented under subclass 14.3. Subject matter wherein a matrix element or link thereto has current fusible conductor which modifies the characteristics of the array when fused.
- 14.4 Logic crosspoint:**  
This subclass is indented under subclass 14.1. Subject matter wherein the matrix processes a control signal to form a nonarithmetic digital output.
- SEE OR SEARCH CLASS:  
326, Electronic Digital Logic Circuitry, appropriate subclasses for digital logic, per se.
- 14.5 Bistable crosspoint:**  
This subclass is indented under subclass 14.1. Subject matter wherein an element has, or is part of, a circuit having two latched operating states, one of which is set by a control signal.
- SEE OR SEARCH CLASS:  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits and Systems, subclasses 185 through 230 for a particular stable state (e.g., bistable) circuit, per se.
- 14.6 Semiconductor crosspoint:**  
This subclass is indented under subclass 14.1. Subject matter wherein a matrix element has an electrical conductivity intermediate that of conductors and that of insulators.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
2.28 through 2.31, for a crosspoint switch detail in a channel selecting matrix, particularly 2.29 for semiconductor switch detail in a channel selecting matrix.
- 14.61 Integrated circuit:**  
This subclass is indented under subclass 14.6. Subject matter wherein a matrix element includes plural circuit elements inseparably mounted upon a continuous substrate.
- SEE OR SEARCH CLASS:  
257, Active Solid-State Devices (e.g., Transistors, Solid-State Diodes), appropriate subclasses for particular solid-state integrated device structure.  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits and Systems, subclass 564 for miscellaneous integrated circuits.
- 14.62 Transistor:**  
This subclass is indented under subclass 14.6. Subject matter wherein the semiconductor element has three or more electrodes and a potential barrier in or on the semiconductor material.
- SEE OR SEARCH CLASS:  
257, Active Solid-State Devices (e.g., Transistors, Solid-State Diodes), appropriate subclasses for particular solid-state transistor structure.  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits and Systems, subclasses 574 through 582 for miscellaneous circuits using three or more electrode solid-state device.
- 14.63 Field effect transistor:**  
This subclass is indented under subclass 14.62. Subject matter wherein the resistance between two terminals of the transistor is controlled by the field produced by the voltage applied to a third terminal.
- SEE OR SEARCH CLASS:  
257, Active Solid-State Devices (e.g., Transistors, Solid-State Diodes), subclasses 213 through 413 for a field effect device, per se.  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits and Systems, subclass 581 for miscellaneous circuits using a field effect transistor.

**14.64 Four or more electrode type:**

This subclass is indented under subclass 14.62. Subject matter wherein the transistor has more than three electrodes contacting the semiconductor material.

**14.65 Plural transistors in element:**

This subclass is indented under subclass 14.62. Subject matter wherein a semiconductor matrix element includes a circuit having two or more transistors.

- (1) Note. At least one matrix element must include plural transistors. A matrix comprising a plurality of single transistor elements is classified elsewhere.

SEE OR SEARCH THIS CLASS, SUBCLASS:

14.62, for a matrix comprising a plurality of single transistor elements.

**14.66 Semiconductor diode:**

This subclass is indented under subclass 14.6. Subject matter wherein the semiconductor element has a potential barrier and two electrodes.

- (1) Note. The term "potential barrier" is intended to include electrode point contacts as well as p-n junctions.

SEE OR SEARCH THIS CLASS, SUBCLASS:

14.1, for similar subject matter having a discharge tube device.

SEE OR SEARCH CLASS:

257, Active Solid-State Devices (e.g., Transistors, Solid-State Diodes), appropriate subclasses for particular solid-state diode structure.

327, Miscellaneous Active Electrical Non-linear Devices, Circuits and Systems, subclasses 583 through 587 for miscellaneous circuits using a two electrode solid state device.

**14.67 Charge storage:**

This subclass is indented under subclass 14.66. Subject matter wherein a diode is, or is connected to, an element which stores electrostatic energy.

**14.68 Plural diodes at crosspoint:**

This subclass is indented under subclass 14.66. Subject matter wherein a semiconductor matrix element includes more than one diode.

- (1) Note. The plural diodes are often connected together so as to form an element having a characteristic which is a composite of the several diodes.

**14.69 Switching element:**

This subclass is indented under subclass 14.6. Subject matter wherein the semiconductor changes between two distinct conductive states in accordance with the value of an applied signal.

- (1) Note. The signal causing switching may be applied across a normally conductive path, or may be applied at an auxiliary electrode.

- (2) Note. The two states are often conducting and nonconducting.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Non-linear Devices, Circuits and Systems, subclasses 365 through 508 for miscellaneous gating circuits which switch input to output.

**146.2** This subclass is indented under the class definition. Subject matter having means for comparing signals or information in digital form to determine which is the greater, the lesser, or whether they are numerically equal.

- (1) Note. The digital signals are not limited to any particular radix, and may be, for example, binary, decimal, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.1 through 5.92, for intelligence comparison for controlling in a selective communication system.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 568+ for a photocell and a coded record wherein the coded information consists of discrete identical indicia and is repre-

sented by the relative positional locations of the indicia on the record.

### **286.01 SYSTEMS:**

This subclass is indented under the class definition. Subject matter relating to a system including transmitter and receiver for signaling and/or indicating.

- (1) Note. This is the miscellaneous subclass for systems of signaling and/or indicating and their subcombinations, not elsewhere provided for.
- (2) Note. The terms signaling and indicating each denote production of a humanly perceptible signal.
- (3) Note. Consult the search notes to the class definitions for some of the numerous other classes which contain signaling or indicating systems.

SEE OR SEARCH THIS CLASS, SUBCLASS:

500+, for condition responsible alarm signaling.

815.4+, for a visual indicator for signaling.

825+, for selective signaling.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, for signaling with a selective display.

### **286.02 Network signaling:**

This subclass is indented under subclass 286.01. Subject matter consisting of an organization of stations with a capability for intercommunication although not necessarily on the same channel.

SEE OR SEARCH THIS CLASS, SUBCLASS:

825.52, for this subject matter further including station addressing.

SEE OR SEARCH CLASS:

370, Multiplex Communications, appropriate subclasses for network of stations including multiplexed communications therebetween.

379, Telephonic Communications, appropriate subclasses for signaling specific to a telephone systems.

### **286.03 Speaking tube including circuit:**

This subclass is indented under subclass 286.02. Subject matter in which a tube-shaped device mechanically transmits and/or amplifies sound in combination with a diverse electrical circuit.

SEE OR SEARCH CLASS:

181, Acoustics, subclass .5 for a speaking tube, per se; e.g., without diverse circuitry.

### **286.04 Manual alarm telegraph; e.g., other than signal box type:**

This subclass is indented under subclass 286.01. Subject matter wherein the system employs interruptions and/or polarity changes of direct current for the transmission of alarm signals that have been keyed.

(1) Note. This is the residual subclass for manual alarm telegraphs systems not elsewhere classified.

(2) Note. Manual alarm telegraphs are also called alarm telegraph systems.

(3) Note. The term "Telegraph system" should be distinguished from the subject matter of Class 178, Telegraphy, which subject matter permits signaling of a message of arbitrary content.

SEE OR SEARCH THIS CLASS, SUBCLASS:

287+, for this subject matter when the transmitter is of the signal box type.

500+, for condition responsive alarm devices.

SEE OR SEARCH CLASS:

178, Telegraphy, subclasses 2+ for Telegraph systems including information signal of arbitrary contents.

### **286.05 Fire:**

This subclass is indented under subclass 286.04. Subject matter in which the alarm is actuated to indicate the occurrence of a fire.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

287+, for a signal box type fire alarm.  
577+, for a flame actuated fire alarm.  
628+, for a smoke actuated fire alarm.

**286.06 Call station:**

This subclass is indented under subclass 286.01. Subject matter in which a transceiver connects rooms or other places from which a signal or call is sent and/or received to the central or main location.

**286.07 Hospital:**

This subclass is indented under subclass 286.06. Subject matter located at an institution where the sick or injured are given medical care.

**286.08 Hotel:**

This subclass is indented under subclass 286.06. Subject matter located at an establishment that provides lodging.

**286.09 Restaurant:**

This subclass is indented under subclass 286.06. Subject matter located at a public eating place.

**286.11 Annunciator:**

This subclass is indented under subclass 286.01. Subject matter in which an electrically controlled signal board or indicator indicates the condition that exists or has existed in an associated circuit.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

815.47, for switchboard or panel type visual indicator for signaling and subclasses 815.01+ for group drop annunciators.

SEE OR SEARCH CLASS:

116, Signals and Indicators, appropriate subclasses for nonelectric signaling.

**286.12 Drop annunciator:**

This subclass is indented under subclass 286.11. Subject matter in which the annunciator consists of a number of pilot lights or drops, each one indicating an associated circuit condition.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

815.47+, for switchboard or panel type visual indicator for signaling.  
815.79+, for pointer annunciator.  
815.81+, for group drop annunciators.  
815.85, for self restoring type annunciator.  
815.9+, for electromagnet releases latch.

**286.13 Mimic:**

This subclass is indented under subclass 286.01. Subject matter in which the signaling or indicating copies or imitates by a spatial distribution that which is being indicated upon a single indicating surface.

(1) Note. This surface is usually a display.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

525, for this subject matter in a condition responsive signaling system.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 168+ for this subject matter in a selective display system.

**286.14 Mapping:**

This subclass is indented under subclass 286.13. Subject matter in which the signaling or indicating forms representation of the whole or a part of an area.

**287** This subclass is indented under subclass 286. Subject matter in which the transmitter is of the signal box type.

(1) Note. The signal box may be of the type which is used in fire alarms, police, district telegraph, messenger box or the like systems. The transmitter usually is a code transmitter.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

534+, for code transmitter systems which are automatically responsive to a condition.

- SEE OR SEARCH CLASS:  
341, Coded Data Generation or Conversion, subclasses 20+ and 173+ for a pulse code transmitter.
- 288** This subclass is indented under subclass 287. Subject matter combined with some other type of subject matter.
- (1) Note. The signaling system, for example, may be combined with an electric light system whose conductors are used as the transmission medium for the signaling system.
- SEE OR SEARCH CLASS:  
178, Telegraphy, subclass 49 for telegraph systems combined with other types of electric systems.
- 289** This subclass is indented under subclass 288. Subject matter combined with a fire extinguisher.
- SEE OR SEARCH CLASS:  
169, Fire Extinguishers, appropriate subclasses, particularly subclass 23 for combinations of extinguishers as sprinkling systems with mere electric alarms other than code signals of the signal box transmission type.
- 290** This subclass is indented under subclass 288. Subject matter in which the signaling system is combined with means to control apparatus at the fire station.
- (1) Note. The system may, for example, automatically open a door at the engine house when the fire alarm rings.
- 291** This subclass is indented under subclass 287. Subject matter having means for repeating signals one or more times or for repeating signals from one line or station to another line or station.
- (1) Note. The signal may be repeated, for example, from the call box circuit into several circuits extending to separate fire houses.
- SEE OR SEARCH CLASS:  
178, Telegraphy, subclasses 70+ for repeaters utilized in telegraphy.
- 292** This subclass is indented under subclass 287. Subject matter provided with means for maintaining the circuit in operable condition so as to permit sending signals at all times in spite of one or more breaks in the wires and signal box systems provided with means for giving an alarm when an abnormal condition in a circuit, which would prevent normal use, develops.
- SEE OR SEARCH CLASS:  
178, Telegraphy, subclass 69 for line clearance and circuit maintenance systems utilized in telegraphy.
- 293** This subclass is indented under subclass 287. Subject matter provided with means at the signal box for transmitting one or more of a variety of signals under the control of the operator.
- SEE OR SEARCH CLASS:  
341, Coded Data Generation or Conversion, subclasses 20+ and 173+ for a pulse code transmitter.
- 294** This subclass is indented under subclass 293. Subject matter provided with a dial selector for selecting the variable signal desired.
- 295** This subclass is indented under subclass 287. Subject matter provided with means for preventing the transmission of signals from any other box or other signals from the same box while any signal is being transmitted therefrom and until such signal is completed.
- 296** This subclass is indented under subclass 295. Subject matter provided with means to obstruct the entrance of the key which is used to operate the signal box, said means operating to prevent insertion of the key only during the transmission of a signal sequence.
- 297** This subclass is indented under subclass 287. Subject matter provided with means to exhibit indications at the signal box from which the signals are transmitted, so that said box also acts as a receiver.

- (1) Note. The signal box, when operated, for example, may produce a preliminary signal of the audible type at the box to discourage would be pranksters from turning in a false alarm.
- 298** This subclass is indented under subclass 297. Subject matter having means to send an answer-back signal to notify the operator that the transmitted signal has been received.
- 299** This subclass is indented under subclass 297. Subject matter in which the signal at the box is operated simultaneously by the transmitted signal.
- 300** This subclass is indented under subclass 297. Subject matter in which the signal at the box is a lamp.
- (1) Note. The lamp may, for example, be used to notify a policeman on his beat to call in.
- 301** This subclass is indented under subclass 287. Subject matter in which the signal box is actuated by a movable key.
- (1) Note. The key may, for example, be attached to the box by means of a chain, or the key may be in the custody of the person who turns in the alarm, who must surrender the key to box mechanism before he can turn the alarm in, so that his identity may be made known.
- 302** This subclass is indented under subclass 301. Subject matter in which the key is normally housed by a frangible closure, which must be broken in order to obtain the key for operation of the box.
- 303** This subclass is indented under subclass 287. Subject matter provided with a frangible closure which must be broken in order to send a signal.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
302, for this subject matter where the frangible closure encloses a movable key, which key is used to transmit the signal.
- 304** This subclass is indented under subclass 287. Subject matter provided with means for combating false alarms.
- (1) Note. The signal box may, for example, be provided with means for detaining, as by hand-cuffing means, the person who sends in an alarm.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
301, for signal box systems where the person turning in the alarm must surrender an individual key to the signal box mechanism before he can send the alarm.
- 305** This subclass is indented under subclass 287. Subject matter in which the signal box is actuated by a local circuit separate from the main circuit.
- 306** This subclass is indented under subclass 305. Subject matter in which the signal box is provided with a local circuit for use by watchmen.
- 307** This subclass is indented under subclass 287. Subject matter consisting of a transmitter utilized in signal box systems.
- SEE OR SEARCH CLASS:  
341, Coded Data Generation or Conversion, subclasses 20+ and 173+ for a pulse code transmitter.
- 308** This subclass is indented under subclass 307. Subject matter in which the signal is sent automatically when the door of the signal box is opened.
- 309** This subclass is indented under subclass 307. Subject matter having a rotary make and break wheel.
- SEE OR SEARCH CLASS:  
341, Coded Data Generation or Conversion, subclasses 16 and 17 for a pulse code transmitter having a rotary make and break wheel.

**309.15 Timer controlled:**

This subclass is indented under subclass 286.01. Subject matter in which the system includes means whereby the communication is brought about after a predetermined time lapse or is continued for a predetermined time following initiation.

**SEE OR SEARCH CLASS:**

- 219, Electric Heating, subclass 719 for a timer control system for a microwave heating device.
- 368, Horology: Time Measuring Systems or Devices, subclasses 19+ for a mechanical clock with an electric alarm and subclasses 108+ for an electric alarm clock.

**309.2** This subclass is indented under subclass 309.15. Subject matter combined with means other than partially or wholly electrical means for conveying information or intelligence.

**309.3** This subclass is indented under subclass 309.15. Subject matter including an additional means, not under the control of the timer, for conveying information or intelligence.

**309.4** This subclass is indented under subclass 309.15. Subject matter including a plurality of indicators selectively or sequentially controlled by the timer.

**309.5** This subclass is indented under subclass 309.4. Subject matter including a manually actuated means which has no utility in the operation involving the timer but may be utilized for controlling one or more of the indicators independently of the timer.

**309.6** This subclass is indented under subclass 309.15. Subject matter in which the communication system includes two circuit maker-breakers in series, both of which must be closed in order for the information or intelligence to be transmitted, and both of the circuit maker-breakers being under the control of the timer.

**310.01 Signal over power line:**

This subclass is indented under subclass 286.01. Subject matter wherein communication signals are sent from one point to another

in a system by means of an existing power line in the system.

- (1) Note. The system may be an electric light system over whose conductors the signals are sent.
- (2) Note. The information signal may be an address or a code signal.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 288+, for this subject matter where the signal system is a signal box system.
- 320, for signaling systems in which the electric signal is sent along a fluid conduit.

**SEE OR SEARCH CLASS:**

- 455, Telecommunications, subclass 270 for a radio receiver using a power line as a wave collector.
- 725, Interactive Video Distribution Systems, subclass 79 for local video distribution system using existing power network, subclass 130 for video distribution system with upstream communication using power signal over network, and subclass 150 for one-way video distribution system using power signal over network.

**310.02 Modulation technique:**

This subclass is indented under subclass 310.01. Subject matter including details of technique for impressing a signal onto a carrier waveform for transmission over a power line.

- (1) Note. The carrier can be a direct current or an alternating current.

**310.03 Noise reduction (e.g., filtering):**

This subclass is indented under subclass 310.01. Subject matter wherein a circuit is provided to compensate for signal defects.

**310.04 Zero crossing:**

This subclass is indented under subclass 310.03. Subject matter including means to extract information from its carrier wave at a region close to the zero crossing point of the carrier wave.

**310.05 Impedance matching (e.g., Y-match or delta match):**

This subclass is indented under subclass 310.01. Subject matter wherein a circuit is provided to make the impedance of a line terminal equal to the impedance of a circuit to which it is connected in order to achieve optimum signal transfer.

SEE OR SEARCH CLASS:

333, Wave Transmission Lines and Networks, subclass 17.3, 32+, and 124+ for impedance matching without communication.

**310.06 Bidirectional (e.g., with transceiver):**

This subclass is indented under subclass 310.01. Subject matter including at least two communicating terminals which can both transmit and receive signals.

**310.07 With inductive coupling (e.g., transformer or torroid):**

This subclass is indented under subclass 310.01. Subject matter wherein information on the power line is transferred to or from a terminal through a mutual or common inductance.

SEE OR SEARCH CLASS:

333, Wave Transmission Lines and Networks, subclasses 24+ for coupling networks which may include inductive coupling.

**310.08 With coupling plug:**

This subclass is indented under subclass 310.01. Subject matter wherein information on the power line is transferred to or from a terminal through a connector.

**311.2 Nonselective paging (e.g., public address system):**

This subclass is indented under subclass 286.01. Subject matter wherein there is a humanly perceptible indication which is used to summon an individual and the indication is nonselective.

- (1) Note. The subject matter of this subclass is limited to nonselective paging. Selective paging is classified elsewhere.

SEE OR SEARCH THIS CLASS, SUBCLASS:

7.2 through 7.63, for selective paging systems.

- 313** This subclass is indented under subclass 286.02. Subject matter having means to send an interrogation from one station to another and having means to send the answer to said interrogation back from said second station to said first station.

SEE OR SEARCH THIS CLASS, SUBCLASS:

10.1 through 10.6, for selective systems for automatically and selectively answering interrogations.

- 314** This subclass is indented under subclass 313. Subject matter having means to sound an alarm if the answer to the interrogation is improper.

- 315** This subclass is indented under subclass 286.01. Subject matter having selsyn-type transmitters and receivers.

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.34, for this subject matter in telemetering systems.

SEE OR SEARCH CLASS:

318, Electricity: Motive Power Systems, subclasses 690+ for self-synchronous electric motor systems.

- 316** This subclass is indented under subclass 286.02. Subject matter in which the receiver is provided with means which are unbalanced by the transmitter signal and is provided with means for rebalancing said means.

SEE OR SEARCH CLASS:

318, Electricity: Motive Power Systems, subclasses 638+ for electric motor systems controlled by a self-balancing network.

- 317** This subclass is indented under subclass 316. Subject matter in which the unbalanced means at the receiver is automatically rebalanced.



- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
870.43, for similar subject matter utilized in telemetering systems.
- 318** This subclass is indented under subclass 286. Subject matter having synchronous distributors at both the transmitter and receiver.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
870.13+, for similar subject matter utilized in telemetering systems.
- SEE OR SEARCH CLASS:  
370, Multiplex Communications, subclasses 304+ for multiplexing systems which include a synchronous distributor at both the transmitter and receiver.
- 319** This subclass is indented under subclass 286.01. Subject matter in which the receiver has plural electromagnets or plural motors.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
870.05, for similar subject matter utilized in telemetering systems.
- 320** This subclass is indented under subclass 286.01. Subject matter in which the electric signal is transmitted along a fluid conduit.
- (1) Note. The fluid conduit may, for example, be a fire hose, so that the firemen may be able to communicate back from the nozzle to the engine pumper.
- SEE OR SEARCH CLASS:  
174, Electricity: Conductors and Insulators, subclasses 8+ and 47 for fluid conduits combined with electrical conductors.
- 321** This subclass is indented under subclass 286.01. Subject matter which is portable and self-contained.
- (1) Note. This subclass includes, for example, movie ushers' flashlights which have means for signaling.
- SEE OR SEARCH CLASS:  
362, Illumination, subclasses 157+ for battery flashlights of general utility.
- 322** This subclass is indented under subclass 286.01. Subject matter in which the system has means to cancel any indications after a fixed time.
- 323** This subclass is indented under subclass 286.01. Subject matter for reporting the status of a game.
- SEE OR SEARCH CLASS:  
116, Signals and Indicators, subclasses 222+ for mechanical game reporting devices.  
273, Amusement Devices: Games, appropriate subclasses for games in combination with game reporting devices.  
473, Amusement Devices: Games, and its incorporated class (273, Amusement Devices, Games), for a game device or apparatus with a game reporting device.
- 326** This subclass is indented under subclass 286.01. Subject matter in which a single variation indication is given at plural points or in plural manners.
- (1) Note. The indication may, for example, be given by an electric light signal and also by an electric bell signal, so that the bell rings when the light flashes.
- 327** This subclass is indented under subclass 326. Subject matter provided with means to cut off a sound signal.
- (1) Note. The sound signal, for example, may be cut off while the light signal continues to flash, or one sound signal may be cut off while the second one continues to sound.
- 328** This subclass is indented under subclass 286.01. Subject matter having an audible signal.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
384+, for audible signals, per se.

**329** This subclass is indented under subclass 328. Subject matter in which the audible signal operates intermittently.

**330** This subclass is indented under subclass 286.01. Subject matter for signaling whether a person is “in” or “out”.

- (1) Note. A door bell button may, for example, cause an “out” sign to flash instead of causing the bell to ring.

**331** This subclass is indented under subclass 286.01. Subject matter having a periodic or flashing signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 329, for this subject matter where the signal indicator is audible.

**332** This subclass is indented under subclass 286.01. Subject matter having signal lights.

**333** This subclass is indented under subclass 286.01. Subject matter having significantly recited or significant power supply systems.

- (1) Note. The system, for example, may be provided with means to substitute an auxiliary source of power if the regular source fails.

SEE OR SEARCH CLASS:

- 307, Electrical Transmission or Interconnection Systems, subclasses 64+ for emergency power systems of general application.

#### **384.1 AUDIBLE INDICATION:**

This subclass is indented under the class definition. Subject matter comprising signalling means for producing an acoustic wave as a signalling indication.

SEE OR SEARCH CLASS:

- 116, Signals and Indicators, appropriate subclasses for nonelectrical audible indicators.  
178, Telegraphy, subclass 99.1 for private sounders (e.g., acoustically shielded).  
219, Electric Heating, subclass 248 for a heating device combined with a sole

plate-type pressure application means (e.g., a flatiron, etc.) including a condition-responsive indicator, subclass 269 for an igniter-type resistive element indicating means, or subclass 720 where a control system for a microwave heating device has a display or alarm.

- 221, Article Dispensing, subclass 3 for article dispensing with audible recorder, register, indicator, signal, or exhibitor.

- 222, Dispensing, subclass 39 for dispensing with audible recorder, register, indicator, signal, or exhibitor.

- 367, Communication, Electrical: Acoustic Wave Systems and Devices, subclasses 140+ for acoustic signalling devices for use in electro-acoustic communication.

- 368, Horology: Time Measuring Systems or Devices, subclasses 243+ for signalling means.

- 704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 231+ for speech analysis (e.g., phoneme recognition) and subclasses 258+ for speech synthesis.

#### **384.2 Ultrasonic pest control:**

This subclass is indented under subclass 384.1. Subject matter wherein the audible signalling means includes a source for generating electrical signals within an ultrasonic frequency range and a transducer means for converting the electrical signals into an acoustic wave to repel unwanted animals.

SEE OR SEARCH CLASS:

- 43, Fishing, Trapping, and Vermin Destroying, appropriate subclasses for similar subject matter wherein the animal is destroyed or at least injured.

- 116, Signals and Indicators, subclass 22 for nonelectrical animal frightening device.

- 367, Communications, Electrical: Acoustic Wave Systems or Devices, subclass 139 for animal control.

**384.3 Simulation:**

This subclass is indented under subclass 384.1. Subject matter wherein the produced audible sounds are imitative sounds.

- (1) Note. This subclass, includes, for example, audible signalling means for producing an imitative representation of sounds emitted by animals, engines, ship propellers, vehicles, children's toys, etc.

**SEE OR SEARCH CLASS:**

446, Amusement Devices: Toys, subclasses 397+ for sounding amusement devices.

**384.4 Electronic siren (e.g., wail tone or yelp tone warning device):**

This subclass is indented under subclass 384.1. Subject matter wherein the audible signalling means includes a source for generating audio frequency electrical signals having a rising and falling pitch and a transducer for converting the signals into the produced audible sounds.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

404.1, for pneumatic siren sound producer.

**SEE OR SEARCH CLASS:**

116, Signals and Indicators, subclass 147 for nonelectrical siren.

**384.5 With computer element:**

This subclass is indented under subclass 384.1. Subject matter wherein the audible signalling means comprises a keyboard, memory means, or computer means connected to a transducer means for inputting, storing, or processing information representing or relating to the produced sounds outputted by the transducer means.

**SEE OR SEARCH CLASS:**

84, Music, subclasses 602+ for electrical musical tone generator instrument with digital memory circuit.

**384.6 Piezoelectric:**

This subclass is indented under subclass 384.1. Subject matter wherein the audible signalling means is provided with a vibrator device for converting energized electrical signals into

audible sounds in such a manner that the operation of the device depends on the interaction between electric charge of the energized electrical signals and the deformation or mechanical stress property of a crystal or ceramic element incorporated into the device.

**SEE OR SEARCH CLASS:**

84, Music, subclass 730 for electrical musical tone generator instrument with piezoelectric transducer.  
367, Communications, Electrical: Acoustic Wave Systems and Devices, subclass 180 for piezoelectric receivers and subclass 155 for underwater type piezoelectric transducer array.  
381, Electrical Audio Signal Processing Systems and Devices, subclass 190 for electrostrictive, magnetostrictive, or piezoelectric electro-acoustic audio transducer.

**384.7 Electronic:**

Subject matter under 384.1 having circuitry comprising at least a signal generator for generating an audio frequency electrical signal and a transducer means for converting the signal into audible sounds.

- (1) Note. The circuitry may include other devices or components such as an amplifier, filter, switching means, feedback for affecting the generation of the electrical signals or the outputted sounds.

**384.71 Timing:**

This subclass is indented under subclass 384.7. Subject matter comprising a clock or timing means for producing the audible sounds at a repetitive rate or for controlling the start or the duration or the effect of the produced sounds.

**384.72 Plural generators:**

This subclass is indented under subclass 384.7. Subject matter comprising a plurality of oscillators for generating audio frequency signals at different operating frequencies or means for producing multi-tone audible sounds.

**384.73 With sound transducer details:**

This subclass is indented under subclass 384.7. Subject matter including at least a structural element of the sound transducer.

- (1) Note. The structural element includes, for example, coil, core, diaphragm, etc. or supports therefor.

**SEE OR SEARCH CLASS:**

381, Electrical Audio Signal Processing Systems and Devices, subclasses 150+ for nonindicating Electro Acoustic Audio Transducer.

**385.1 Explosive:**

This subclass is indented under subclass 384.1. Subject matter having means to produce a sharp, loud sound by a violent and sudden release of confined energy.

**SEE OR SEARCH CLASS:**

43, Fishing, Trapping, and Vermin Destroying, subclass 84 for explosive traps.  
102, Ammunition and Explosives, appropriate subclasses for explosive devices in general.  
116, Signals and Indicators, subclass 105 for nonelectrical ignition control explosive alarm.

**387.1 Weatherproofing:**

This subclass is indented under subclass 384.1. Subject matter provided with means for inclosing the audible signalling device to protect it from moisture, insects, or other unwanted substances.

- (1) Note. Watertight housing, sealed casing, etc., are included in this subclass.

**SEE OR SEARCH CLASS:**

219, Electric Heating, subclass 209 combined with a diverse-type electrical art device.

**388.1 Diaphragm (e.g., horn or buzzer):**

This subclass is indented under subclass 384.1. Subject matter wherein the audible sounds are produced by the vibration of an actuated flexible membrane.

**SEE OR SEARCH CLASS:**

116, Signals and Indicators, subclasses 142+ for nonelectrical diaphragm horns, and subclass 59 for vehicle-energy actuated diaphragm horns.

381, Electrical Audio Signal Processing Systems and Device, subclasses 112+ and subclasses 355+ for speaker, per se.

**388.2 Alternating current:**

This subclass is indented under subclass 388.1. Subject matter wherein the vibration of the diaphragm is caused by a current that changes the polarity with time in such a manner that the current reaches maximum in one direction, decreases to zero, reverses itself, and reaches minimum in the opposite direction.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

401.1, for alternating current used in percussion type sound producers.

**388.3 With auxiliary flexible membrane:**

This subclass is indented under subclass 388.1. Subject matter wherein the sounds are produced by the vibration of at least two diaphragms or by the vibration of a diaphragm and a resonator disc or plate secured to the diaphragm.

- (1) Note. The two diaphragms are arranged in closely spaced parallel planes or in orthogonal planes.

**SEE OR SEARCH CLASS:**

116, Signals and Indicators, subclass 145 for nonelectrical parallel diaphragms.

**388.4 With resonance chamber:**

This subclass is indented under subclass 388.1. Subject matter provided with an air space or volume adapted to vibrate at a specific tuned frequency to amplify the produced sounds.

**388.5 Armature support:**

This subclass is indented under subclass 388.1. Subject matter including means for pivotally mounting or holding a movable part operated by an electromagnet to transmit its movement to the diaphragm for producing sounds.

- (1) Note. This subclass includes, the bridge the plate, the frame, and the arm by which the armature is secured or supported.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
397.1, for armature support of percussion type sound producers.
- 388.6 Having spring:**  
This subclass is indented under subclass 388.5. Subject matter wherein the means for pivotally mounting or holding a movable part comprises a resilient member for supporting the armature or for restoring the armature to a normal position.
- 388.7 Interrupter:**  
This subclass is indented under subclass 388.1. Subject matter including means for controlling the flow of current into an electromagnet thereby operating a movable part to vibrate the diaphragm.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
397.3, for interrupter of percussion-type sound producers.
- 388.8 Having spring:**  
This subclass is indented under subclass 388.7. Subject matter wherein the interrupter comprises a resilient contact member or is supported by a resilient member.
- 390.1 Rotary actuator:**  
This subclass is indented under subclass 388.1. Subject matter comprising a driving mechanism operated by an electric motor to move in a circular motion for mechanically agitating the diaphragm.
- SEE OR SEARCH CLASS:  
116, Signals and Indicators, subclasses 143+ for nonelectrical rotary striker diaphragm horns.
- 390.2 Having spring:**  
This subclass is indented under subclass 390.1. Subject matter wherein the driving mechanism comprises a resilient member for holding a driving shaft in a desired position by exerting a thrust force upon the shaft or for retracting the means for agitating the diaphragm.
- 391.1 Housing or mounting:**  
This subclass is indented under subclass 388.1. Subject matter comprising means for supporting or enclosing the audible signalling device.
- (1) Note. This subclass includes supports for the diaphragm.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
396.1, for housing or mounting of percussion type sound producers.
- 392.1 Percussion-type sound producer (e.g., signal chimes or bells):**  
This subclass is indented under subclass 384.1. Subject matter having means to strike one element against another in order to produce the audible sounds.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
388.1, for this subject matter in which one of the elements is a diaphragm.
- SEE OR SEARCH CLASS:  
84, Music, subclasses 402+ and 411+ for similar subject matter utilized in music.  
116, Signals and Indicators, subclass 60 for vehicle-energy actuated bells, subclasses 148+ for nonelectrical bells, and subclass 25 for nonelectrical periodic bells.
- 392.2 Rotary actuator:**  
This subclass is indented under subclass 392.1. Subject matter comprising a driving mechanism operated by an electric motor to move in a circular motion to actuate the striking means.
- 392.3 Volume control:**  
This subclass is indented under subclass 392.1. Subject matter comprises means for regulating the loudness of the produced audible sounds.
- 392.4 Tubular sound producer (e.g., signal chimes):**  
This subclass is indented under subclass 392.1. Subject matter wherein the striking means hits a cylindrical body for producing the audible sounds.

**392.5 Resonator (e.g., signal chimes):**

This subclass is indented under subclass 392.1. Subject matter wherein the striking means hits a vibrating member associated with a tuned air chamber to emit a desired tone.

**393.1 Plural armatures:**

This subclass is indented under subclass 392.1. Subject matter comprising at least two movable elements attracted by one or more electromagnets for actuating the striking means for generating the audible sounds.

**393.2 Battery operated:**

This subclass is indented under subclass 392.1. Subject matter comprising a battery for energizing the striking means.

SEE OR SEARCH CLASS:

362, Illumination, subclasses 157+ for flashlights having an unitary battery.

**393.3 Pushbutton:**

This subclass is indented under subclass 392.1. Subject matter in which a manually actuated device must be depressed to operate the striking means for generating the audible sounds.

**393.4 Including timer:**

This subclass is indented under subclass 392.1. Subject matter including a timing mechanism for controlling the timing of the strokes produced by the striking means.

**395.1 Suspended (e.g., locomotive bell):**

This subclass is indented under subclass 392.1. Subject matter including means for hanging the sound producer.

**396.1 Housing or mounting:**

This subclass is indented under subclass 392.1. Subject matter comprising means for enclosing or supporting the sound producing device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

391.1, for housing or mounting of diaphragm sound producers.

**397.1 Armature support:**

This subclass is indented under subclass 392.1. Subject matter comprising means for pivotally holding or mounting a movable part which

oscillates when the coils of the audible signaling means are energized by a current to reciprocate the striking means.

- (1) Note. This subclass includes, for example, the bridge, the plate, the frame, the arm, or the yoke by which the armature is secured or supported.

SEE OR SEARCH THIS CLASS, SUBCLASS:

388.5, for armature support of diaphragm sound producers.

**397.2 Having spring:**

This subclass is indented under subclass 397.1. Subject matter comprising a resilient member for carrying the armature, for restoring the armature to a normal position or for supplementing the effect of the current to move the armature.

**397.3 Interrupter:**

This subclass is indented under subclass 392.1. Subject matter including means for controlling the flow of current into an electromagnet to cause one element to strike against the other repeatedly.

SEE OR SEARCH THIS CLASS, SUBCLASS:

388.8, for interrupter of diaphragm sound producers.

**397.4 Having spring:**

This subclass is indented under subclass 397.3. Subject matter wherein means for controlling the flow of current includes a resilient contact member or is supported by a resilient member.

**397.5 Polarized:**

This subclass is indented under subclass 392.1. Subject matter wherein the striking means is electromagnetically operated and comprises a permanent magnet operatively causing the reciprocating of the armature.

- (1) Note. This subclass includes, for example, a permanent magnet for magnetizing the armature, thereby creating permanent magnetic flux in the air gaps between the ends of the armature and the cores; current sent through the coils, produces a flux which adds to or subtracts from the

permanent magnetic flux in the air gaps causing the armature to attract or repulse from two poles of the coils thereby causing the movement of the armature to reciprocate the striking mechanism; successive reversal of current in the coil terminal changes the direction of magnetism in the air gaps and thereby causing the armature to move up and down.

**398.1 Nonelectrical driving means (e.g., spring or weight):**

This subclass is indented under subclass 392.1. Subject matter wherein the striking means is driven by gravitational or stored mechanical energy.

**398.2 With electromagnetic control:**

This subclass is indented under subclass 398.1. Subject matter having an armature operated by an electromagnet to restrict or release the striking means.

**398.3 Including circuit breaker:**

This subclass is indented under subclass 398.2. Subject matter comprising an electric circuit having switch means for controlling the energization of the electromagnet.

**401.1 Alternating current:**

This subclass is indented under subclass 392.1. Subject matter in which striking means is operated by a current that changes polarity with time in such a manner that the current reaches maximum in one direction, decreases to zero, reverses itself, and reaches minimum in the opposite direction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

388.2, for alternating current used in diaphragm sound producers.

**404.1 Pneumatic-type sound producer (e.g., whistle or siren):**

This subclass is indented under subclass 384.1. Subject matter wherein the signalling means is operated by the flowing of air or other gaseous stream to produce the audible sounds.

SEE OR SEARCH THIS CLASS, SUBCLASS:

815.72, for diverse indications having a pneumatic-type indication.

SEE OR SEARCH CLASS:

251, Valves and Valve Actuation, subclasses 129.01+ for electrically actuated valve.

**404.2 Rotary actuator:**

This subclass is indented under subclass 404.1. Subject matter comprising an electric motor for actuating a driving mechanism in a circular motion to produce the audible sounds.

**404.3 With valve:**

This subclass is indented under subclass 404.1. Subject matter comprising means for regulating the flow of air or other gaseous stream thereby controlling the effect of the produced sounds.

**407.1 TACTUAL INDICATION:**

This subclass is indented under the class definition. Subject matter comprising means for producing an indication signal perceptible by the sense of touch.

(1) Note. The sense of touch is of human or animal.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclass 205 for nonelectrical indicators by touch.

345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 173+ for touch panel used as input device of selective display systems.

901, Robots, subclass 32 for tactile sensor.

**407.2 With input means (e.g., keyboard):**

This subclass is indented under subclass 407.1. Subject matter combined with a manually actuated device to enter control or information data.

(1) Note. The manually actuated device includes, for example, a keyboard which may not, however, be the means for producing the indication itself.

## SEE OR SEARCH CLASS:

- 341, Coded Data Generation or Conversion, subclasses 22+ for electronic keyboard or keypad, per se.
- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 168+ for keyboard as input device for providing selective electrical control in selective display systems.

**425.1 REPEATER IN UNSPECIFIED TYPE COMMUNICATIONS LINE OR CHANNEL (E.G., RELAY STATION):**

This subclass is indented under the class definition. Subject matter comprising a generically recited transmission path (e.g., telecommunications or communications line) having signal retransmitting or amplifying equipment in the path.

- (1) Note. This subclass is directed to such subject matter in which the line is not identifiable as a particular communication line (e.g., telephone, telegraph).

## SEE OR SEARCH CLASS:

- 178, Telegraphy, subclasses 70+ for a telegraph repeater.
- 330, Amplifiers, appropriate subclasses for an amplifier.
- 370, Multiplex Communications, subclass 274, 279, 293, 315+, 492, and 501+ for repeaters used in multiplex communications.
- 375, Pulse or Digital Communications, subclasses 211+ for a pulse or digital signal repeater.
- 379, Telephonic Communications, subclasses 338+ for a telephone repeater.
- 455, Telecommunications, subclasses 7+ for a carrier wave repeater.

**425.2 Power control:**

This subclass is indented under subclass 425.1. Subject matter comprising means for controlling power supplied to the repeater.

**425.5 LAND VEHICLE ALARMS OR INDICATORS:**

This subclass is indented under the class definition. Subject matter including systems or devices with an alarming or indicating function mounted on, or carried within, a land vehicle.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 500+, for systems having generic condition responsive alarms or indicators.
- 901+, for vehicle mounted alarms or indicators which respond to a condition or stimulus external to the vehicle.

## SEE OR SEARCH CLASS:

- 116, Signals and Indicators, subclasses 28+ for similar devices which are nonelectrically actuated.

**426 Of burglary or unauthorized use:**

This subclass is indented under subclass 425.5. Subject matter in which an alarm or indicator is activated in response to an attempt at unauthorized entry or use of the vehicle.

- (1) Note. Classification here requires significant combination of burglar alarm with vehicle.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 500+, especially 541+ and 568.1+, for burglar alarms, per se.

## SEE OR SEARCH CLASS:

- 180, Motor Vehicles, subclasses 287+ for antitheft systems which prevent unauthorized use by controlling one or more systems during attempted operation of the vehicle, as by: (1) application of the brakes, (2) stoppage of the fuel supply, or (3) opening of the ignition circuit in response to a timer.
- 307, Electrical Transmission or Interconnection Systems, subclasses 10.2+ for antitheft systems which prevent activation of the ignition or starter systems of the vehicle.



**427 Of motorcycles or bicycles:**

This subclass is indented under subclass 426. Subject matter wherein the vehicle is a two-wheeled type either motorized or manually propelled.

**428 Responsive to change in voltage or current in a vehicle electrical system:**

This subclass is indented under subclass 426. Subject matter including alarms which are actuated by direct sensing of changes in current or voltage within any existing electrical circuit (e.g., domelight or starter) of the vehicle.

**429 Responsive to inertia, vibration, or tilt:**

This subclass is indented under subclass 426. Subject matter in which the alarm is sensitive to vibrations or other motions of a vehicle caused by an intruder's actions.

SEE OR SEARCH THIS CLASS, SUBCLASS:

566, for vibration sensitive intrusion alarms, per se.

**430 With entrance/exit time delay:**

This subclass is indented under subclass 426. Subject matter wherein actuation of the alarm is delayed for a predetermined time interval to allow a legitimate user of the vehicle to enter or exit the vehicle without sounding the alarm.

**431 For trailer:**

This subclass is indented under subclass 425.5. Subject matter wherein the vehicle is a trailer or a motor vehicle combined with a trailer.

SEE OR SEARCH THIS CLASS, SUBCLASS:

687, for condition responsive indicators which respond to the connection or disconnection of circuits of general utility.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, subclass 10.8 for trailer lighting circuits with significant recitation of the means for coupling with the circuits of a towing vehicle.

**432 For bicycle:**

This subclass is indented under subclass 425.5. Subject matter wherein the vehicle is a bicycle.

SEE OR SEARCH CLASS:

315, Electric Lamp and Discharge Devices: Systems, subclass 78 for generator powered vehicle lighting systems, per se.

362, Illumination, subclasses 473+ for bicycle signal light systems in combination with illuminating systems.

**433 For school bus:**

This subclass is indented under subclass 425.5. Subject matter wherein the vehicle is a school bus.

**434 For taxi:**

This subclass is indented under subclass 425.5. Subject matter wherein the vehicle is a taxicab.

SEE OR SEARCH CLASS:

180, Motor Vehicles, subclass 288 for a motor vehicle provided with a safety-promoting means which is responsive to the failure of a taxicab operator to activate the vehicle's fare meter upon the boarding of a passenger.

**435 Of relative distance from an obstacle:**

This subclass is indented under subclass 425.5. Subject matter including indicators which enable a driver to estimate the relative distance to an obstacle such as another vehicle.

**436 Of collision or contact with external object:**

This subclass is indented under subclass 425.5. Subject matter including systems which indicate contact between the vehicle and an external object.

(1) Note. Systems classified here must have significant alarm or indication function.

SEE OR SEARCH CLASS:

180, Motor Vehicles, subclasses 271+ for systems with a control function or other nonalarm response to contact with an external object.

**437 Curb:**

This subclass is indented under subclass 436. Subject matter in which the external object is a curb.

**438 Internal alarm or indicator responsive to a condition of the vehicle:**

This subclass is indented under subclass 425.5. Subject matter wherein the alarm or indicator is actuated in response to a specific condition of the vehicle and the alarm or indicator communicates with an occupant of the vehicle (e.g., the driver).

- (1) Note. Included in this and the indented subclasses are: (a) fully automatic alarms and indicators (e.g., fluid level indicators) and (b) indicators which automatically respond to a manual actuation of a system (e.g., gear position indicators).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

286.01+, for automatic or manual alarms and indicators having only nominal vehicle structure.  
901+, for vehicle mounted alarms or indicators which respond to a condition or stimulus external to the vehicle.

**439 Operation efficiency (e.g., engine performance, driver habits):**

This subclass is indented under subclass 438. Subject matter wherein the degree of efficiency in the operation of the vehicle is indicated.

- (1) Note. Included here are devices which indicate: (1) relative fuel economy, (2) erratic driving behavior, or (3) other factors related to improper operation of the vehicle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

575, and 576, for devices which determine driver capability or alertness.

**440 Tilt, imbalance, or overload:**

This subclass is indented under subclass 438. Subject matter including systems which inform the operator of an unsafe load or weight distribution on the vehicle.

**441 Speed of vehicle, engine, or power train:**

This subclass is indented under subclass 438. Subject matter including alarms or indicators which respond to the speed of the vehicle or of a component of its power train.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

466, for speed responsive alarms or indicators which communicate with persons outside the vehicle.

SEE OR SEARCH CLASS:

180, Motor Vehicles, subclasses 170+ for systems in which the speed responsive signal performs a direct control function in one or more of the vehicle's systems.

**442 Tire deflation or inflation:**

This subclass is indented under subclass 438. Subject matter wherein the specific condition is a deviation from the proper inflation of a pneumatic tire.

- (1) Note. This is the repository for on-board electric alarms or indicators of under inflation in vehicle mounted pneumatic tires and of unbalanced inflation in vehicle mounted paired (dual) tires.
- (2) Note. The alarm or indicator here is triggered by the inflation pressure falling below a preset limit. Indicators which directly report a quantitative measurement of the tire pressure are classified in Class 73.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 146+ for quantitative measurement of pneumatic tire pressure.

116, Signals and Indicators, subclasses 34+ for nonelectric tire deflation alarms or indicators.

152, Resilient Tires and Wheels, subclasses 415+ and 418+ for systems which maintain tire air pressure by means of an on-board air supply.

- 443 By indirect detection means (e.g., height measurement):**  
This subclass is indented under subclass 442. Subject matter wherein the deviation from proper inflation pressure is determined from a measurement of a parameter other than air pressure.
- 444 Relative wheel speed:**  
This subclass is indented under subclass 443. Subject matter wherein the measured parameter is the relative rotational speed of two or more wheels of the vehicle.
- 445 With particular telemetric coupling:**  
This subclass is indented under subclass 442. Subject matter including systems in which a signal, generated by a sensor on the rotating wheel, is transmitted to an alarm or indicator on a nonrotating portion of the vehicle by means other than direct conduction of electricity.
- 446 Acoustic wave:**  
This subclass is indented under subclass 445. Subject matter in which the signal is carried by sound waves generated by a device mounted on the rotating wheel.
- SEE OR SEARCH CLASS:  
367, Communications, Electrical: Acoustic Wave Systems and Devices, subclass 13, 117, and 137+ for generic acoustic wave transmission systems.
- 447 Radio wave:**  
This subclass is indented under subclass 445. Subject matter in which the signal is carried by electromagnetic waves of radio frequency generated by a transmitter mounted on the rotating wheel.
- 448 Inductive:**  
This subclass is indented under subclass 445. Subject matter wherein a coil or permanent magnet is mounted on the wheel in spaced relationship with a coil mounted on a nonrotating portion of the vehicle.
- 449 Temperature:**  
This subclass is indented under subclass 438. Subject matter wherein the specific condition is the temperature of a particular component of the vehicle.
- 450 Fluid level:**  
This subclass is indented under subclass 438. Subject matter wherein the specific condition is the depth of a fluid in a reservoir.
- 450.1 Of hydraulic brake fluid:**  
This subclass is indented under subclass 450. Subject matter wherein the fluid is hydraulic brake fluid.
- 450.2 Of fuel:**  
This subclass is indented under subclass 450. Subject matter wherein the fluid is a fuel.
- 450.3 Of lubricant (e.g., engine oil):**  
This subclass is indented under subclass 450. Subject matter wherein the fluid is a lubricant.
- 451 Fluid pressure:**  
This subclass is indented under subclass 438. Subject matter wherein the specific condition is the pressure in a contained fluid.
- 452 Of brake fluid:**  
This subclass is indented under subclass 451. Subject matter wherein the fluid is hydraulic brake fluid.
- 453 Brake or clutch condition:**  
This subclass is indented under subclass 438. Subject matter wherein the specific condition is a physical property of the vehicle brake, or clutch, system.
- 454 Wear:**  
This subclass is indented under subclass 453. Subject matter wherein the physical property of the brake or clutch system is the degree of wear of the linings or pads.
- SEE OR SEARCH CLASS:  
192, Clutches and Power-Stop Control, subclass 30 for nonelectric clutch wear indicators.

**455 Battery charging system condition:**

This subclass is indented under subclass 438. Subject matter wherein the specific condition is the degree of charge in a battery or the current drawn from, or supplied to, a battery.

**456 Gear position:**

This subclass is indented under subclass 438. Subject matter wherein the indicator informs the driver as to which one of several selectable gear combinations available in a manual or automatic transmission is engaged.

**SEE OR SEARCH CLASS:**

116, Signals and Indicators, subclass 28.1 for mechanical gear position indicators.

**457 Reminder:**

This subclass is indented under subclass 438. Subject matter wherein the alarm or indicator informs the operator that a vehicle system requires an action on his part.

**457.1 Of seat belt application:**

This subclass is indented under subclass 457. Subject matter wherein the required action is the application of a seat belt.

**SEE OR SEARCH CLASS:**

180, Motor Vehicles, subclasses 268+ for systems in which the seat belt mechanism deactivates the ignition circuit or performs some other control function.

**457.2 Of headlight energization:**

This subclass is indented under subclass 457. Subject matter wherein the required action is the activation or deactivation of a headlight circuit.

**SEE OR SEARCH CLASS:**

315, Electric Lamp and Discharge Devices: Systems, subclass 83 for indicators of high or low beam headlamp circuit activation.

**457.3 Of parking brake application:**

This subclass is indented under subclass 457. Subject matter wherein the required action is the application, or release, of a parking brake.

**457.4 Of service interval expiration:**

This subclass is indented under subclass 457. Subject matter wherein the required action is the performance of a periodic maintenance function.

**458 Lamp or lamp circuit condition:**

This subclass is indented under subclass 438. Subject matter in which fault conditions within a vehicle illumination or signal light system are indicated.

**SEE OR SEARCH CLASS:**

315, Electric Lamp and Discharge Devices: Systems, subclasses 82+ for vehicle headlamp systems which may include fault indicators.

362, Illumination, subclasses 459+ for vehicle mounted illumination devices which may include fault, or position (e.g., aiming) indicators.

**459 Plural conditions:**

This subclass is indented under subclass 438. Subject matter including systems or devices which combine two or more automatic alarms or indicators, or in which a single alarm or indicator serves two or more diverse functions.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

439+, for alarms or indicators which respond to a combination of two or more related conditions which measure engine efficiency.

**460 With voice warning:**

This subclass is indented under subclass 459. Subject matter in which the alarm or indicator includes a recorded or synthesized voice signal.

**461 With particular display means:**

This subclass is indented under subclass 459. Subject matter wherein plural diverse indicators share a common housing or mounting.

**462 Digital:**

This subclass is indented under subclass 461. Subject matter wherein one or more of the indicators is a digital display.

**463 External alarm or indicator of movement:**

This subclass is indented under subclass 425.5. Subject matter including external signalling systems which automatically respond to a state of motion (e.g., turning, acceleration, deceleration, backing) of the vehicle and which communicate with persons outside the vehicle (e.g., other drivers, pedestrians).

- (1) Note. The state of motion may be sensed directly, as by an accelerometer, or it may be sensed by devices responsive to the activation of a system which causes the movement (e.g., the steering linkage or the transmission gear selector).

**464 Plural indications (e.g., go, slow, stop):**

This subclass is indented under subclass 463. Subject matter in which two or more diverse motion indicators are combined.

**465 Turning or steering:**

This subclass is indented under subclass 463. Subject matter in which the external signal indicates that the vehicle is executing a turning movement.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 475+, for systems which are manually set to indicate the operator's intention to initiate a turning movement and may be automatically cancelled upon completion of the turn.

**466 Speed:**

This subclass is indented under subclass 463. Subject matter in which the external signal indicates the speed of the vehicle or warns of a condition of overspeed or underspeed.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 441, for speed responsive alarms or indicators which communicate with occupants of the signalling vehicle.

**467 Acceleration or deceleration:**

This subclass is indented under subclass 463. Subject matter in which the external signal indicates a change in the speed of the vehicle.

- (1) Note. External signal lights which are actuated by: (a) an inertial sensor, (b) a switch associated with the accelerator pedal, or (c) a device which senses changes in engine vacuum are classified here. Brake lights, which are actuated by a switch associated with the brake pedal, are provided for elsewhere in this class (340).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 479, for brake lights, which are actuated by a switch associated with the brake pedal.

SEE OR SEARCH CLASS:

- 180, Motor Vehicles, subclasses 282+ for systems or devices which directly control a vehicle subsystem (e.g., an ignition circuit) in response to an acceleration or deceleration.

**468 External signal light system:**

This subclass is indented under subclass 425.5. Subject matter wherein the alarm or indicator is a manually actuated signal light system which communicates with persons outside the vehicle (e.g., other drivers, pedestrians).

- (1) Note. Systems must be manually actuated but may be automatically deactivated.

SEE OR SEARCH CLASS:

- 315, Electric Lamp and Discharge Devices: Systems, appropriate subclasses for signal light systems of general utility.

**469 With two or more intensity levels (e.g., day or night):**

This subclass is indented under subclass 468. Subject matter wherein the signal light system can operate at two or more brightness levels.

- (1) Note. The selection of brightness level may be made either manually or automatically.

**470 Pass - no pass:**

This subclass is indented under subclass 468. Subject matter in which the signal is used to indicate to the driver of an overtaking vehicle whether or not it is safe to pass the signalling vehicle.

**471 Hazard warning or distress signalling:**

This subclass is indented under subclass 468. Subject matter including systems designed to indicate to other drives that the signalling vehicle is inoperative, or is being operated in an unusual manner and itself constitutes a hazard to other vehicles.

**472 Auxiliary signal permanently attached to vehicle:**

This subclass is indented under subclass 471. Subject matter including alarms or indicators which are attached to a vehicle (e.g., police car light bar), but which are not "standard" vehicle signalling systems.

**473 Portable signal:**

This subclass is indented under subclass 471. Subject matter including alarms or indicators which may be carried in a vehicle, and displayed on or off the vehicle, and which are not normally attached to the vehicle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

908, for similar portable hazard warning signals placed on a highway to warn of hazards, per se.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclasses 63+ for similar signals without electrical components.

**474 With audible signal:**

This subclass is indented under subclass 468. Subject matter wherein the signal light system is combined with an audible signal.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

326+, for systems of general utility combined with audible signals.

**475 Turn signal:**

This subclass is indented under subclass 468. Subject matter wherein an external signal is manually actuated to indicate the driver's intention to execute a turning movement.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

465, for external signals which automatically indicate a turning motion in response to actuation of the vehicle steering system.

**476 With automatic cancelling:**

This subclass is indented under subclass 475. Subject matter wherein the external signal is automatically deactivated after the turn is completed.

**477 By predetermined time interval or distance:**

This subclass is indented under subclass 476. Subject matter wherein deactivation of the signal occurs after a specified time interval has elapsed or after a specified distance has been travelled.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

815.3, for visual signals of general utility which automatically cancel after a predetermined elapsed time interval.

**478 With plural bulbs sequentially flashed:**

This subclass is indented under subclass 475. Subject matter wherein the external signal consists of a timed sequence of multiple flashing lights.

**479 Brake light:**

This subclass is indented under subclass 468. Subject matter wherein the signal light is actuated by a switch associated with the brake system of the vehicle.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

453+, for systems which automatically respond to a physical condition of the brake system other than its activation.

**480 Electromagnetically actuated mechanical signal:**

This subclass is indented under subclass 425.5. Subject matter in which the indicator is a mechanical device which is caused to move from an inactive position to a display position by means of a solenoid or motor.

**SEE OR SEARCH CLASS:**

116, Signals and Indicators, subclasses 28+ for similar devices which are actuated manually or pneumatically.

**481 Wigwag type:**

This subclass is indented under subclass 480. Subject matter including devices which oscillate during display.

**482 Normally encased:**

This subclass is indented under subclass 480. Subject matter including devices which are contained in a protective housing at least while in the inactive (undisplayed) position.

**483 Plural concurrent indicators:**

This subclass is indented under subclass 482. Subject matter including two or more individually actuated signal members which are capable of simultaneous display.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

488, for similar devices which are not normally encased nor simultaneously displayable.

**484 Sliding sign or shutter:**

This subclass is indented under subclass 482. Subject matter wherein the device is a plane sheet which is brought into display position by a rectilinear motion.

**485 Window exhibited sign or shutter:**

This subclass is indented under subclass 482. Subject matter wherein the indicator remains in the protective housing both during display and during inactive storage and is displayed through a transparent window when activated.

- (1) Note. The electromagnetic actuation may be applied to: (1) the indicator member, (2) the window, or (3) a shutter which covers the window.

**SEE OR SEARCH CLASS:**

116, Signals and Indicators, subclasses 42+ for similar devices which are manually or pneumatically actuated.

**486 Drum:**

This subclass is indented under subclass 485. Subject matter wherein the indicator is a cylinder or drum.

**487 Pivoting:**

This subclass is indented under subclass 480. Subject matter wherein the indicator is brought into display position by rotation about an axis.

**SEE OR SEARCH CLASS:**

116, Signals and Indicators, subclasses 51+ for pivoted signals or indicators which are manually or pneumatically actuated.

**488 Multiple indicators:**

This subclass is indented under subclass 487. Subject matter wherein more than one indicator may be brought into display position by rotation about an axis.

**489 Three or more positions:**

This subclass is indented under subclass 487. Subject matter wherein a single indicator may be displayed in more than two positions.

**490 Vertical axis:**

This subclass is indented under subclass 489. Subject matter wherein the axis of rotation of the indicator is perpendicular to the earth's surface.

**500 CONDITION RESPONSIVE INDICATING SYSTEM:**

This subclass is indented under the class definition. Subject matter where an electrical means provides a humanly perceptible signal in response to the attainment of a predetermined condition.

- (1) Note. This subclass includes, for example, alarm circuits or signals which are automatically responsive to some condition, such as excessive temperature. Alarm devices which are manually activated are classified in Class 340, subclasses 286.04+.

- (2) Note. Condition responsive indicators in combination with structural details of a particular art device are classified with the art device; e.g., telemetering systems, data processing systems, chemical apparatus, tools, or vehicles.
- (3) Note. The combination of a condition responsive indicator and a switching system is classified herein; however, if the indicator means is merely an ancillary element, classification is elsewhere; e.g. Class 307 or 361.
- (4) Note. Particular quantitative testing or measuring means in combination with an electrical condition responsive indicator are classified with the appropriate testing and measuring class, except if the quantitative measurement is peculiar to an alarm device; e.g., a smoke detector alarm system with a meter indication of its power supply.
- (5) Note. If a qualitative testing, measuring, or monitoring means is claimed to be permanently associated with the environment being tested, such as a machine monitoring device, classification is in Class 340, while if it is temporarily associated, as in a portable test set, classification is in the appropriate testing and measuring class.
- (6) Note. The class definition of this class, under "SEARCH CLASS", refers to the many other classes which contain alarms and indicators.

**SEE OR SEARCH THIS CLASS, SUB-CLASS:**

- 3.7, 3.71, for selective monitoring and control including indicator.
- 5.3 through 5.33, for an authorization control system having an indication or indication of improper access.
- 438+, and 463+, for vehicle condition responsive alarms or indicators.
- 825.36+, for a selective communication system with an indication or alarm.
- 870.09, for telemetering systems which have added alarms.

- 910+, and 917+, for traffic control indicators which are responsive to vehicle detectors.

**SEE OR SEARCH CLASS:**

- 116, Signals and Indicators, appropriate subclasses, especially subclass 67 and 200+ for nonelectrical alarms and indicators which are automatically responsive to a condition.
- 200, Electricity: Circuit Makers and Breakers, appropriate subclasses under subclass 52 for circuit makers and breakers whose controllers are responsive to a condition.
- 234, Selective Cutting (e.g., Punching), subclasses 22+ for a selective cutting device having means responsive to a given operating condition (or malfunction) to impose an auxiliary control thereon.
- 307, Electrical Transmission or Interconnection Systems, subclasses 86+, 97, 99, 116+, and 152 for electrical transmission or switching systems which are responsive to a condition.
- 315, Electric Lamp and Discharge Devices: Systems, subclass 129 for electric lamp or discharge systems with a signal, indicator, or alarm.
- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclass 187 for a stable state circuit which is externally effected and subclasses 509+ for miscellaneous circuits which are externally effected.
- 331, Oscillators, subclasses 65+ for electric oscillation generators combined with means responsive to an external physical condition.
- 336, Inductor Devices, subclass 30 for inductors with condition responsive adjusting means.
- 338, Electrical Resistors, subclasses 13+ for resistors whose resistance value is responsive to a condition.
- 361, Electricity: Electrical Systems and Devices, subclasses 1+ for safety and protection systems which may be condition responsive; subclasses 139+ for electrical relay systems; and subclasses 271+ for capacitors which are automatically responsive or non-responsive to a condition.



367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 93+ and 136 for acoustic wave-type intruder detectors.

**501 With particular system function (e.g., temperature compensation, calibration):**

This subclass is indented under subclass 500. Subject matter with significant functional relationship between the condition sensing means and indicating means, additional to the basic condition responsive actuating function.

- (1) Note. Typical additional functions are special processes, priority of urgency, adjustment, temperature compensation, and calibration.

**SEE OR SEARCH CLASS:**

- 73, Measuring and Testing, subclasses 1.01+ for calibration of a measuring device.  
374, Thermal Measuring and Testing, subclasses 1+ for calibration of a thermally responsive device.

**502 Acknowledgement:**

This subclass is indented under subclass 501. Subject matter together with means to effect a change in the indication to further indicate that the condition has been noted.

- (1) Note. Acknowledgement exists when a remote office sends an alert signal in response to the sensed condition to a central office where the signal is indicated; and the central office then responds with an acknowledgement signal (which may or may not return to the remote office), which causes a change in the indication at the central office. This should be distinguished from interrogation which occurs when the controller at the central office sends an interrogating signal such as pulse or code to the remote office, and the remote office returns a signal indicative of the original signal and any intervening disturbances. This should also be distinguished from "answer-back" which occurs when the remote office sends an alarm signal to the central office, and the central office returns a signal indicative of the successful completion of the alarm function.

**503 With ringback:**

This subclass is indented under subclass 502. Subject matter where an additional indication is provided after acknowledgement, indicating that the sensed condition is further changes (e.g., corrected, removed, or worsened).

- (1) Note. The additional indication may be caused by an additional signal, or a return of the original signal to normal. However, for classification here, more than a mere inherent return of the indication to normal is necessary. Usually means is provided to reset the system to normal indication.

**504 Answer-back:**

This subclass is indented under subclass 501. Subject matter where a signal indicative of receipt of the indication is returned to the location originating the alarm.

- (1) Note. See subclass 502 Note for distinction between answer-back and acknowledgement systems.

**505 Interrogator-responder:**

This subclass is indented under subclass 501. Subject matter where the indication is only given upon receipt of an initiating signal.

- (1) Note. The response signal may be indicative of the original interrogating signal and any intervening disturbances. However, the condition is indicated only in response to the interrogation. See subclass 502 for acknowledgement systems, and the Note thereunder for the distinction between interrogation and acknowledgement systems.

**506 Alarm system supervision:**

This subclass is indented under subclass 501. Subject matter where there is continuous monitoring of the operativeness of the alarm circuits in the system.

- (1) Note. The system having its operativeness monitored is referred to as the "primary system" in the definitions of the subclasses indented hereunder.

- (2) Note. Supervision should be distinguished from automatic testing of the system as in subclass 516 below, in that, supervision implies continuous surveillance of the system while automatic testing is periodic.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
635+, for monitoring of a system in which the combination to form a condition responsive primary alarm system is not recited.
- 507 Fail-safe:**  
This subclass is indented under subclass 506. Subject matter having the primary alarm circuit itself organized so as to give alarm upon its failure.
- 508 Redundant (e.g., added circuit or loop):**  
This subclass is indented under subclass 506. Subject matter having either duplicate primary alarm circuits, an added circuit, or double loops in the primary alarm circuit, to monitor at least an element of the primary circuit.
- 509 Plural or diverse current sources:**  
This subclass is indented under subclass 506. Subject matter having plural, or diverse current sources, with the supervisory current typically being imposed on the primary alarm circuit.
- (1) Note. Systems using polarity reversal are not classified herein, but are usually classified in subclass 513.
- 510 Bridge or potential divider:**  
This subclass is indented under subclass 506. Subject matter having the primary alarm circuit arranged with at least one potential divider from which supervisory currents are derived.
- 511 Threshold or window (e.g., of analog electrical level):**  
This subclass is indented under subclass 506. Subject matter wherein the supervisory circuit is coupled to the primary alarm circuit and is responsive to the signal therein attaining a predetermined level or range of levels.
- 512 Pulse:**  
This subclass is indented under subclass 506. Subject matter having electrical pulses, either from an energizing pulse source, or from some circuit means forming pulses related to an electrical alarm signal, in either the primary or supervisory circuit.
- 513 Diode:**  
This subclass is indented under subclass 506. Subject matter having a diode added to the primary alarm circuit by which a supervisory current may be effective.
- 514 Testing:**  
This subclass is indented under subclass 501. Subject matter where the operativeness of the system is determined at discrete times.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
501, for alarm system calibration.
- 515 Simulation of condition:**  
This subclass is indented under subclass 514. Subject matter where the test is performed by imitation of a condition.
- (1) Note. The test is normally performed at the sensor to imitate the condition being monitored.
- 516 Automatic (e.g., periodic, start-up):**  
This subclass is indented under subclass 514. Subject matter where the test is invariably performed at periodic intervals, or as a function of the energization or deenergization of the primary alarm system.
- 517 Selection from a plurality of sensed conditions:**  
This subclass is indented under subclass 501. Subject matter including more than one sensing means and having a particular relationship therebetween.
- (1) Note. Mere duplication of sensing means is insufficient for classification herein.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
825+, for selective communication systems.

- SEE OR SEARCH CLASS:  
307, Electrical Transmission or Interconnection Systems, subclasses 116+ for condition responsive electrical switching systems.
- 518 Scanning:**  
This subclass is indented under subclass 517. Subject matter where the sensor means are monitored one at a time in a predetermined order.
- 519 Worst condition:**  
This subclass is indented under subclass 517. Subject matter where the system responds to the sensor means reporting the condition that deviates the most from a predetermined setting.
- (1) Note. Examples of the worst conditions are the greatest unbalance, the greatest difference from a standard, or the most extreme variation in a given direction.
- 520 First sensed exclusively indicated:**  
This subclass is indented under subclass 517. Subject matter where the first condition to become abnormal is selected for indication.
- (1) Note. Subsequent alarm indications may be locked out, or may be displayed to show order of sensing.
- 521 Plural diverse conditions:**  
This subclass is indented under subclass 517. Subject matter responsive to at least two disparate conditions (e.g., intrusion and flame).
- 522 Combined for response:**  
This subclass is indented under subclass 521. Subject matter where the system responds to a specified combination of the sensed conditions.
- 523 Particular sequence of conditions:**  
This subclass is indented under subclass 517. Subject matter responsive to a given series of events.
- 524 Condition position indicator:**  
This subclass is indented under subclass 517. Subject matter wherein the indication imparts information as to the location, in addition to the attainment, of the condition being monitored.
- 525 Display board:**  
This subclass is indented under subclass 524. Subject matter wherein the means providing indication include a plurality of visual indicators, each of which is actuated by one of the sensors, located upon a surface at a single location.
- (1) Note. The display may mimic the sensor array.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
286.13+, for a manually operated alarm with a mapping or mimicking indicator.
- 526 Predetermined rate of occurrence:**  
This subclass is indented under subclass 501. Subject matter in which a specified number of events (one or more) must occur within a specified time period in order to cause or prevent the actuation of the humanly perceptible signal.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
609, for a fluent particle counting flow rate alarm system.
- 527 Time delay:**  
This subclass is indented under subclass 501. Subject matter having a circuit which delays the transmission of a signal, or the output of a transducer, for a desired length of time.
- (1) Note. Time delay introduced by means other than circuitry, e.g., a transducer structure providing such a delay, is not classified herein.
- SEE OR SEARCH CLASS:  
70, Locks, subclasses 267+ for time interval controlled lock operating mechanisms.  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 261+ for miscellaneous time delay circuits.  
361, Electricity: Electrical Systems and Devices, subclass 91.3 for overvoltage protection with time delay and subclass 195 for time-delay systems.

- 368, Horology: Time Measuring Systems or Devices, subclasses 10+ for clocks combined with alarm or signal.
- 528 Entrance/exit:**  
This subclass is indented under subclass 527. Subject matter where the time delay allows an authorized person to either disarm the alarm or exit a protected area before the humanly perceptible signal is actuated.
- 529 Condition persistence:**  
This subclass is indented under subclass 527. Subject matter where there is a lapse of time between the sensing of the condition and the giving of the indication, where the indication is given only if the condition persists for the duration of the time lapse.
- 530 Capacitor:**  
This subclass is indented under subclass 529. Subject matter where the time-delay circuit is controlled by the charging or discharging of a capacitor.
- 531 With particular coupling link:**  
This subclass is indented under subclass 500. Subject matter having specific connecting means between the sensing and indicating means.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
870.28+, for continuously variable indication via a radiant energy beam.
- 532 Having particular safety function:**  
This subclass is indented under subclass 531. Subject matter wherein the particular communication link has a specific limitation to enable safe operation in a particular environment (e.g., in the presence of explosive vapor).
- (1) Note. "Intrinsic safety" systems are classified herein.
- SEE OR SEARCH CLASS:  
361, Electricity: Electrical Systems and Devices, subclasses 1+ for electrical safety systems, generally.
- 533 Wired:**  
This subclass is indented under subclass 531. Subject matter with a transmitting means connected to indicating means by an arrangement of conductors.
- (1) Note. To complete the search for this subject matter, the search should extend into the appropriate fields of classification of wired coupling means, such as Class 178, for Telegraphy; Class 379 for Telephonic Communications.
- 534 Coded message:**  
This subclass is indented under subclass 533. Subject matter with a pulse code source in the transmitting means.
- (1) Note. The message may relate to location or to the condition sensed.
- SEE OR SEARCH CLASS:  
341, Coded Data Generation or Conversion, subclasses 20+ and 173+ for pulse code transmitter.
- 535 Mechanical code means (e.g., coded disc):**  
This subclass is indented under subclass 534. Subject matter having a switching device actuated by a mechanical actuator (e.g., cam or disc) upon an occurrence of the alarm condition.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
287+, for manually actuated signal box-type fire alarm boxes.
- SEE OR SEARCH CLASS:  
178, Telegraphy, subclass 2 and 79 for code transmitters in telegraph systems.
- 536 Noninterfering:**  
This subclass is indented under subclass 533. Subject matter provided with means for preventing the transmission of other signals while a first signal is being transmitted.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
295, for this subject matter when not automatically responsive to a condition.

## SEE OR SEARCH CLASS:

178, Telegraphy, subclasses 17+ for telegraphy systems having noninterfering transmitters.

**537 With impedance level coding:**

This subclass is indented under subclass 533. Subject matter where the sensor or transmitter output is encoded by selection of specifically related impedance.

- (1) Note. Graded or binary coded decimal coding for analog signals are found in Class 340, subclass 870.27 for telemetering systems.

**538 Combined with power line:**

This subclass is indented under subclass 533. Subject matter where the wired communication link is a wired electrical power transmission system.

- (1) Note. The system need not be the power source of the indicating system.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

310.01+, for transmitting a manually initiated alarm signal over a power line.

**539 Radio:**

This subclass is indented under subclass 531. Subject matter where the communication link is by radio waves (i.e., other than light, X, or gamma rays, etc.).

## SEE OR SEARCH CLASS:

- 343, Communications: Radio Wave Antennas, appropriate subclasses for radio wave communication systems in general.
- 375, Pulse or Digital Communications, subclasses 200 through 294 for the radio link, per se.

**540 Specific condition:**

This subclass is indented under subclass 500. Subject matter distinguished by the particular detected condition in response to which the signal is produced.

- (1) Note. This subclass includes, for example, alarms which are automatically

operated in response to some condition, such as excessive temperature.

## SEE OR SEARCH CLASS:

- 42, Firearms, subclass 1.01 for firearms with miscellaneous indicators.
- 91, Motors: Expansible Chamber Type, subclass 1 with signal or indicator.
- 92, Expansible Chamber Devices, subclass 5 with signal or indicator.
- 116, Signals and Indicators, appropriate subclasses, especially subclasses 67+ and 200+ for nonelectrical alarms and indicators which are automatically responsive to a condition.
- 200, Electricity: Circuit Makers and Breakers, appropriate subclasses under subclass 52 for circuit makers and breakers whose controllers are responsive to a condition.
- 234, Selective Cutting (e.g., Punching, subclasses 22+ for a selective cutting device having means responsive to a given operating condition (or malfunction) to impose an auxiliary control thereon.
- 307, Electrical Transmission or Interconnection Systems, subclasses 86+, 97, 99, 116+, and 152 for electrical transmission and switching systems which are responsive to a condition.
- 315, Electric Lamp and Discharge Devices: Systems, subclasses 129+ for electric lamp or discharge systems with a signal, indicator, or alarm.
- 331, Oscillators, subclasses 65+ for electric oscillation generators combined with means responsive to an external physical Condition.
- 336, Inductor Devices, subclass 30 for inductors with condition responsive adjusting means.
- 338, Electrical Resistors, subclasses 13+ for resistors whose resistance value is responsive to a condition.
- 361, Electricity: Electrical Systems and Devices, subclasses 1+ for safety and protection systems which may be condition responsive; subclasses 170+ for electrical relay systems; and subclass 280 for capacitors which are automatically responsive or nonresponsive to a condition.

**541 Intrusion detection:**

This subclass is indented under subclass 540. Subject matter where the entry or attempted entry by a living being (intruder) into a protected area is detected.

**SEE OR SEARCH CLASS:**

- 43, Fishing, Trapping, and Vermin Destroying, subclass 59 for burglar traps.
- 109, Safes, Bank Protection, or a Related Device, subclass 21, 31, and 38 for alarms, signals, or indicators.
- 116, Signals and Indicators, subclasses 75+ for mechanical burglar alarms.
- 182, Fire Escape, Ladder, or Scaffold, subclass 18 with indicator, signal, or alarm.
- 200, Electricity: Circuit Makers and Breakers, subclass 61.93 for anti-intrusion type switch.

**542 Lock:**

This subclass is indented under subclass 541. Subject matter wherein unauthorized or improper operation of a latching device operated by a key, dial, etc., is detected.

**SEE OR SEARCH CLASS:**

- 70, Locks, subclasses 432+ for locks with condition indicators; subclasses 262+ for systems, and subclasses 266+ for operating mechanism.
- 92, Expansible Chamber Devices, subclass 5 for locks with a signal or indicator.
- 200, Electricity: Circuit Markers and Breakers, subclasses 61.64+ for lock, bolt, or keeper actuated switches.

**543 Permutation:**

This subclass is indented under subclass 542. Subject matter where the lock is combination lock (dial, push-button, etc.).

**SEE OR SEARCH CLASS:**

- 70, Locks, subclasses 286+ for combination locks, per se, and subclasses 432+ for locks with condition indicators.
- 361, Electricity: Electrical Systems and devices, subclasses 171+ for code responsive relay systems.

**544 Disturbance of fluid pressure:**

This subclass is indented under subclass 541. Subject matter wherein the intrusion is detected by a pressure sensing device responsive to confined fluid under superatmosphere, subatmosphere, or time-varying pressure.

- (1) Note. The confined fluid may be within a barrier bounding the protected area or within the entire area.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 626, for pressure responsive indication of more general utility.

**545.1 Door or window movement:**

This subclass is indented under subclass 541. Subject matter responsive to the movement of a temporary closure for intrusion detection.

- (1) Note. For example, a wall or building is a permanent barrier, but a door thereof is only a temporary barrier.

**SEE OR SEARCH CLASS:**

- 49, Movable or Removable Closures, subclasses 13+ for a closure condition signal or indicator.
- 116, Signals and Indicators, subclasses 86+ for a mechanical burglar alarm on a door or window.
- 160, Flexible or Portable Closure, Partition, or Panel, subclass 10 with signal or indicator.
- 200, Electricity: Circuit Makers and Breakers, subclasses 61.62+ for closure, closure operator, or accessory switches; and subclass 61.93 for intrusion-responsive switches.
- 232, Deposit and Collection Receptacles, subclasses 35 through 37 for door-operated signals and indicators.

**545.2 Specified sensor:**

This subclass is indented under subclass 545.1. Subject matter having specific detail of a device which is designated to produce an indicative signal in response to an event or stimulus within its detection zone.

## SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclass 61.93 for such switches, per se.

**545.3 Sensing of electromagnetic energy (e.g., light, infrared, or microwave):**

This subclass is indented under subclass 545.2. Subject matter in which the movement is sensed according to a detected level of radiant energy.

(1) Note. Conditions sufficient for classification herein include:

(a) a specified type of electromagnetic energy which becomes present or absent at a sensor, or

(b) a threshold change in a preexisting electromagnetic energy field which occurs at a sensor.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

552+, for intrusion detection by sensing the disturbance of electromagnetic waves in general.

## SEE OR SEARCH CLASS:

250, Radiant Energy, appropriate subclasses for general radiant energy responsive electric signaling without intrusion detection purpose.

**545.4 Sensing of electrical parameter (e.g., piezoelectricity or capacitance):**

This subclass is indented under subclass 545.2. Subject matter in which the movement is sensed according to a detected level of particular electrical power energy.

(1) Note. A piezoelectric or a capacitive sensing element is appropriate for this subclass; the mere making or breaking of an electrical circuit is insufficient for classification herein.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

561+, for intrusion detection by sensing the disturbance of an electric field in general.

## SEE OR SEARCH CLASS:

324, Electricity: Measuring and Testing, appropriate subclasses for circuit testing by sensing electrical parameter.

**545.5 Inertia-type sensor (e.g., mercury or pendulum switch):**

This subclass is indented under subclass 545.2. Subject matter in which the movement is detected by a switch which is capable of sensing acceleration, shock, vibration, and abrupt change in velocity.

## SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 488+ for mechanically measuring and testing of speed, velocity, or acceleration, and 570+ for mechanically measuring and testing of vibration.

**545.6 Door, cover, or lid for self-contained article (e.g., refrigerator, mailbox, drawer, cabinet, or box):**

This subclass is indented under subclass 545.1. Subject matter wherein the door or window is part of a structure other than a building or room.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

569, for an indicator responsive to an article placement or removal from a mailbox.

570, for an indicator responsive to an article placement or removal from a drawer.

## SEE OR SEARCH CLASS:

232, Deposit and Collection Receptacles, subclasses 35 through 37 for letter box door-operated signals and indicators without intrusion detection purpose.

**545.7 Specified door or window portion (e.g., doorknob):**

This subclass is indented under subclass 545.1. Subject matter responsive to the movement of a particular element of the door or window, other than the door or window panel itself.

**545.8 Specified door or window attachment (e.g., shade or blind):**

This subclass is indented under subclass 545.1. Subject matter wherein an opening which is covered by a door or window is additionally covered by a further element whose movement is sensed.

**SEE OR SEARCH CLASS:**

160, Flexible or Portable Closure, Partition, or Panel, subclass 10 for a signal or indicator without intrusion detection purposes.

**545.9 Plural doors or windows:**

This subclass is indented under subclass 545.1. Subject matter responsive to the movement of any door or window of a plurality of doors or windows.

**546 Portable:**

This subclass is indented under subclass 545.2. Subject matter where the alarm means is not permanently attached to the door or window, is self-contained in a single housing, and is of such size and weight to be transportable by a person.

**547 Magnetic sensor:**

This subclass is indented under subclass 545.2. Subject matter in which movement is detected by a device containing or responsive to, a magnet or electromagnet.

**548 Plug or cord tension sensor:**

This subclass is indented under subclass 545.2. Subject matter in which the movement is sensed by the tension in a cord or wire or plug and socket.

**SEE OR SEARCH CLASS:**

200, Electricity: Circuit Makers and Breakers, subclass 61.93 for anti-intrusion switches.

**549 Rotatable sensor:**

This subclass is indented under subclass 545.2. Subject matter in which the movement is sensed by a pivotally mounted feeler-type sensor.

**SEE OR SEARCH CLASS:**

200, Electricity: Circuit Makers and Breakers, subclass 61.93 for such switches, per se.

**550 Partition penetration:**

This subclass is indented under subclass 541. Subject matter responsive to the condition of a barrier member of a structure.

(1) Note. Barrier members of a structure may be permanent, e.g., building walls, or temporary, e.g., doors.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

545.1+, for subject matter responsive to movement of a door or window.

652, for "break-wired" systems, per se.

**SEE OR SEARCH CLASS:**

52, Static Structures (e.g., Buildings), subclasses 783.1+ for window panes, per se; and subclass 105 for static structures with indicia.

200, Electricity: Circuit Makers and Breakers, subclass 61.08 for frangible switches.

**551 Disturbance of magnetic field:**

This subclass is indented under subclass 541. Subject matter responsive to the change of a magnetic field caused by the presence or motion of an intruder.

**SEE OR SEARCH CLASS:**

324, Electricity: Measuring and Testing, subclasses 200+ for magnetic field testing or measurement.

**552 Disturbance of electromagnetic waves:**

This subclass is indented under subclass 541. Subject matter responsive to the intruder disturbing electromagnetic waves.

**SEE OR SEARCH CLASS:**

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar Radio Navigation), subclasses 27+ for reflective wave presence detection.



**553 Standing waves:**

This subclass is indented under subclass 552. Subject matter wherein the electromagnetic waves are stationary (i.e., have maxima and minima at fixed positions).

**554 Doppler effect:**

This subclass is indented under subclass 552. Subject matter responsive to the frequency change of a reflected electromagnetic wave caused by motion of a reflecting object.

**555 Light:**

This subclass is indented under subclass 552. Subject matter wherein the electromagnetic waves are in the visible range (4,000-7,000A).

**SEE OR SEARCH CLASS:**

250, Radiant Energy, subclasses 221+ for photocell systems responsive to animate or inanimate objects.

**556 Beam:**

This subclass is indented under subclass 555. Subject matter wherein the light is gathered and directed into substantially parallel rays.

- (1) Note. The light is generally gathered into one or more groupings, each having a relatively small cross-sectional area with respect to the dimensions of the protected area.

**557 Laser:**

This subclass is indented under subclass 556. Subject matter wherein the light beam source is of the coherent, stimulated emission type.

**561 Disturbance of electric field:**

This subclass is indented under subclass 541. Subject matter responsive to the disturbance of an electric field (e.g., capacitance).

**SEE OR SEARCH CLASS:**

307, Electrical Transmission or Interconnection Systems, subclasses 116+ for a proximity responsive switching system.  
361, Electricity: Electrical Systems and Devices, subclasses 179+ for proximity responsive relay systems.

**562 Capacitance:**

This subclass is indented under subclass 561. Subject matter wherein the electric field disturbance is detected by a change of capacitance in the sensing system.

**563 With bridge:**

This subclass is indented under subclass 562. Subject matter wherein the capacitance change sensing system is a bridge circuit.

**564 Fence:**

This subclass is indented under subclass 562. Subject matter where the capacitance sensor surrounds the protected area.

**565 Responsive to intruder energy:**

This subclass is indented under subclass 541. Subject matter responsive to the energy generated by the intrusion, or of the intruder's body.

- (1) Note. The systems herein are generally passive. The term "generated" should be distinguished from the term "disturbance" used in subclasses 551-561 which implies a pre-existing energy field which is modified by the intrusion.

**566 Vibration:**

This subclass is indented under subclass 565. Subject matter responsive to mechanical disturbance.

**SEE OR SEARCH CLASS:**

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclass 136 for intruder responsive acoustic wave systems.

**567 Electromagnetic energy:**

This subclass is indented under subclass 565. Subject matter responsive to electromagnetic energy.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

552+, for disturbance of electromagnetic waves.

**568.1 Article placement or removal (e.g., anti-theft):**

This subclass is indented under subclass 540. Subject matter responsive to a state of an object being put in or taken away from a protected area.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

541+, for intrusion detection.

573.1+, for human or animal condition.

SEE OR SEARCH CLASS:

53, Package Making, subclass 507 for alarms, signals, or indicators.

169, Fire Extinguishers, subclass 23 for alarms with extinguishing systems.

232, Deposit and Collection Receptacles, subclasses 34 through 37 for a mailbox having signals and indicators.

**568.2 Signal-carrying conduit between sensor and article (e.g., cable, power cord, or data link):**

This subclass is indented under subclass 568.1. Subject matter wherein the placement or removal is determined by monitoring the integrity of a conductor which is physically attached to, or part of, the article and is in signal communication with a sensor.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

531, for a specific connecting means between the sensing and indicating means.

**568.3 Power cord:**

This subclass is indented under subclass 568.2. Subject matter wherein the placement or removal is determined by monitoring the integrity of an electric supply conductor which is physically attached to, or part of, the article and is in signal communication with a sensor.

- (1) Note. Art in this subclass is directed to detecting the removal of an electronic device (e.g., computer or television) by the removal of its power cord from a wall outlet.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

538, for condition responsive alarm sending through the power line, and wherein there is no sensing the disconnection of the power cord of the object.

310.01+, for signal over power line.

SEE OR SEARCH CLASS:

174, Electricity: Conductors and Insulators, appropriate subclasses for power conductor or cable, per se.

**568.4 Specified connector (e.g., phone jack-type plug):**

This subclass is indented under subclass 568.2. Subject matter having a particular physical means of connection between the signal-carrying conduit and either the sensor or the article.

SEE OR SEARCH CLASS:

439, Electrical Connectors, appropriate subclasses for power connector, per se.

**568.5 Shopping cart or item thereon:**

This subclass is indented under subclass 568.1. Subject matter wherein the article being placed or removed is (a) a small-wheeled vehicle to carry merchandise or goods, or (b) any object carried by the small-wheeled vehicle.

SEE OR SEARCH CLASS:

280, Land Vehicles, appropriate subclasses for wheeled vehicle mechanism, per se.

473, Games Using Tangible Projectile, appropriate subclasses for article of recreational activity, such as golf or bowling ball, etc.

**568.7 Currency, credit card, or container therefor (e.g., wallet or handbag):**

This subclass is indented under subclass 568.1. Subject matter wherein the article being placed or removed is (a) a means which can be used for buying goods, or (b) its holder.

SEE OR SEARCH CLASS:

150, Purses, Wallets, and Protective Covers, subclass 101 for purse or handbag with means to deter theft of contents

(e.g., puzzling closure or secret compartment).

**568.8 Article on pedestal, in display case, or mounted on wall (e.g., work of art):**

This subclass is indented under subclass 568.1. Subject matter wherein the article being placed or removed is an object of display on its support.

**569 Mailbox:**

This subclass is indented under subclass 568.1. Subject matter wherein the protected area is a receptacle for mail.

**SEE OR SEARCH CLASS:**

232, Deposit and Collection Receptacles, subclasses 34 through 37 for similar subject matter claimed in combination with significant mailbox structure.

**570 Drawer:**

This subclass is indented under subclass 568.1. Subject matter where the protected area is a drawer.

**SEE OR SEARCH CLASS:**

200, Electricity: Circuit Makers and Breakers, subclass 61.61 for drawer operated switches.

**571 Alarm on protected article:**

This subclass is indented under subclass 568.1. Subject matter where the entire system is attached to the protected object (e.g., in hand-bag).

**572.1 Detectable device on protected article (e.g., "tag"):**

This subclass is indented under subclass 568.1. Subject matter where there is a means on the object of surveillance to which the system is responsive.

- (1) Note. For example, a magnet detectable device is affixed to the protected article.
- (2) Note. A loop of a sensing circuit may be contained in the power connection of an electric appliance.

**SEE OR SEARCH CLASS:**

70, Locks, subclass 57.1 for a means attaching a named anti-theft signaling device onto a protected article.

**572.2 Specified relationship between field and detection frequencies (e.g., nth order harmonics):**

This subclass is indented under subclass 572.1. Subject matter where the detection system generates an interrogation field at a particular frequency, and the device or tag generates a response at another frequency having a predetermined correlation to the field frequency.

**572.3 Deactivatable by means other than mere removal:**

This subclass is indented under subclass 572.1. Subject matter where the element in the device or tag which causes a response to be sent to the detector system can be inactivated without being removed.

**572.4 Specified processing arrangement for detected signal:**

This subclass is indented under subclass 572.1. Subject matter where the manner of handling the detected signal, which results in a determination of placement or removal, is specified.

**572.5 Having tuned resonant circuit:**

This subclass is indented under subclass 572.1. Subject matter where the device or tag has a circuit which is capable of adjusting to respond to a particular frequency wave.

**SEE OR SEARCH CLASS:**

334, Tuners, for tuners, per se.

**572.6 Having "soft" magnetic element (e.g., Permalloy):**

This subclass is indented under subclass 572.1. Subject matter where the device or tag includes an element having magnetic properties of high permeability and low coercivity.

**572.7 Specified antenna structure:**

This subclass is indented under subclass 572.1. Subject matter where the detector system or tag has a particular aerial wave collector structure for sending or receiving signals.

## SEE OR SEARCH CLASS:

343, Communications: Radio Wave Antennas, for antennas, per se.

**572.8 Specified device housing or attachment means:**

This subclass is indented under subclass 572.1. Subject matter where the device or tag casing, support, or affixed element thereon, is specified.

**572.9 Having means locking device to article:**

This subclass is indented under subclass 572.8. Subject matter where the attachment means fastens the device to the article.

## SEE OR SEARCH CLASS:

70, Locks, subclasses 1.5+ for locks with attack-actuated defeating mechanisms.

**573.1 Human or animal:**

This subclass is indented under subclass 540. Subject matter responsive to the condition of a human being or an animal.

- (1) Note. The location of a living being by a force incidental thereto is not a condition of the living being for purposes of this classification.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

541, for intrusion detection.  
666, for detection of the location of a living being by the weight thereof.

## SEE OR SEARCH CLASS:

27, Undertaking, subclass 31 for life signals which indicate that a supposedly dead person is alive.  
600, Surgery, appropriate subclasses for a diagnostic instrument.

**573.2 Nondomestic animal (e.g., for hunting, fishing, or repelling):**

This subclass is indented under subclass 573.1. Subject matter wherein a wild animal is detected.

- (1) Note. Detection may be associated with a means to repel an animal.

## SEE OR SEARCH CLASS:

43, Fishing, Trapping, and Vermin Destroying, appropriate subclass.

**573.3 Domestic animal training, monitoring, or controlling:**

This subclass is indented under subclass 573.1. Subject matter responsive to a condition of a pre-designated animal capable of living near or about the human habitation for the purpose of training, monitoring, or controlling.

**573.4 House arrest system, wandering, or wrong place:**

This subclass is indented under subclass 573.1. Subject matter responsive when a specific, pre-designated person has left his proper location.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

541, for detecting entry or attempted entry by a living being (intruder) into a protected area is detected.

**573.5 Incontinence or enuresis alarm:**

This subclass is indented under subclass 573.1. Subject matter responsive to the condition of a person who is unable to restrain a bodily discharge (e.g., urine) voluntarily (e.g., bed wetting).

**573.6 Water safety alarm:**

This subclass is indented under subclass 573.1. Subject matter responsive to a person falling or nearly falling into a dangerous body of water.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

568.1+, for article placement or removal.

**573.7 Posture alarm:**

This subclass is indented under subclass 573.1. Subject matter responsive to an improper posture of a body.

**574 Holdup:**

This subclass is indented under subclass 573.1. Subject matter responsive to the raising of a person's arms above the level of his head.

## SEE OR SEARCH CLASS:

43, Fishing, Trapping, and Vermin Destroying, subclass 59 for burglar traps.

**575 Sleep:**

This subclass is indented under subclass 573.1. Subject matter responsive to sleep.

- (1) Note. This subclass includes, for example, sleep inhibiting alarms which wake a person up every time he has a tendency to drowse, and antisnore alarms.

**576 Drive capability:**

This subclass is indented under subclass 573.1. Subject matter responsive to the capability of a person to operate a vehicle; e.g., intoxication.

## SEE OR SEARCH CLASS:

180, Motor Vehicles, subclass 272 for safety devices responsive to incapacitated operator.

**577 Flame:**

This subclass is indented under subclass 540. Subject matter wherein the detected condition is the presence or absence of a flame.

## SEE OR SEARCH CLASS:

137, Fluid Handling, subclass 65 for a combustion failure fluid safety cutoff.  
 219, Electric Heating, subclass 248 for a heating device combined with a sole plate-type pressure application means (e.g., a flatiron, etc.) including a condition-responsive indicator, subclass 445.1 for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including an indicator, or subclasses 446.1+ for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including a sensing means.  
 431, Combustion, subclass 13 for combustion with indicator.

**578 By radiant energy:**

This subclass is indented under subclass 577. Subject matter wherein the presence of a flame is detected by radiation emitted therefrom.

## SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 554 for pre-photocell systems with a flame light source.

**579 By ionization or conductivity:**

This subclass is indented under subclass 577. Subject matter wherein the flame is detected by passage of current therethrough due to its ionizing properties.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

629, for ionization-type smoke detectors.

**580 Ice formation:**

This subclass is indented under subclass 540. Subject matter wherein the condition is a solidification of a liquid or gas.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

962+, for ice formation detectors on aircraft.

**581 Thermal:**

This subclass is indented under subclass 580. Subject matter wherein the ice formation is detected by its temperature or its heat transfer properties, or other properties (e.g., conductivity) when the sensed area is heated.

## SEE OR SEARCH CLASS:

62, Refrigeration, subclasses 125+ with indicator or signal.

**582 Vibratory:**

This subclass is indented under subclass 580. Subject matter wherein the ice formation is detected by modification of vibratory energy; e.g., mechanically loading a vibrating sensor.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

615, for similar subject matter sensing the level of fluent material.

**583 Photoelectric:**

This subclass is indented under subclass 580. Subject matter wherein the ice formation is detected by modification of light incident on an electrical photo responsive device.

**584 Thermal:**

This subclass is indented under subclass 540. Subject matter wherein the condition is a predetermined level of heat or temperature.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 581, for the thermal detection of ice formation.
- 606, for flow rate detection by a heat responsive sensor.
- 622, for heat responsive detection of liquid level.

SEE OR SEARCH CLASS:

- 116, Signals and Indicators, subclass 101 and 216+ for mechanical thermal alarms and indicators.
- 219, Electric Heating, subclass 248 for a heating device combined with a sole plate-type pressure application means (e.g., a flatiron, etc.) including a condition-responsive indicator, subclass 445.1 for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including an indicator, subclasses 446.1+ for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including a sensing means, or subclass 667 for a condition-responsive temperature load sensing power switching supply system for an inductive heating device.
- 329, Demodulators, appropriate subclasses for thermal change type demodulators.
- 331, Oscillators, subclass 66 for electric oscillation generators combined with condition sensing means responsive to temperature changes, and wherein some characteristic (e.g., wave amplitude or frequency) of the generator is varied by the condition sensing means.
- 356, Optics: Measuring and Testing, subclasses 43+ for optical pyrometers.
- 361, Electricity: Electrical Systems and Devices, subclasses 161+ for thermally responsive relay control circuit.
- 374, Thermal Measuring and Testing, subclasses 4 through 28 and 43 through 57 for thermal testing, subclasses 29+

for heat flux measurement, subclasses 31+ for a calorimeter; and subclasses 100+ for a thermometer with quantitative indication, particularly subclasses 121+ for a radiation thermometer.

- 431, Combustion, subclasses 13+ for a burner having a signal or indicator; and subclasses 75+ for a burner controlled by a combustion zone sensor.

**585 Refrigerated storage:**

This subclass is indented under subclass 584. Subject matter wherein the monitored thermal condition is located interiorly of a refrigerated enclosure.

SEE OR SEARCH CLASS:

- 62, Refrigeration, subclasses 129+ for a refrigeration system condition responsive indicator.

**586 Portable:**

This subclass is indented under subclass 584. Subject matter wherein the entire device including power supply is self-contained in a single housing, and of such size and weight to be transportable by a person.

**587 False alarm resistant:**

This subclass is indented under subclass 584. Subject matter wherein the device has provision to prevent an indication due to extraneous causes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 529, for alarm systems having a time delay to permit indication only of a persistent condition.

**588 Time-temperature relationship (e.g., over-temperature exceeds predetermined interval or time-temperature integral):**

This subclass is indented under subclass 584. Subject matter wherein some time-temperature relationship (e.g., interval of overtemperature or time-temperature integral) exceeds or falls below a predetermined value.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 588+, for an alarm having a time-delay circuit to indicate a persistent condition.

**589 Rate of temperature change:**

This subclass is indented under subclass 588. Subject matter wherein the time-temperature relationship is the time rate of change of the temperature.

**590 Fusible, frangible, or destructible sensor:**

This subclass is indented under subclass 584. Subject matter wherein the temperature or heat condition causes the fusing or destruction of at least a portion of the temperature sensor.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

577, for a flame detecting device having a portion destroyed by flame.

SEE OR SEARCH CLASS:

337, Electricity: Electrothermally or Thermally Actuated Switches, subclasses 401+ for a thermally actuated switch with fusible, combustible, or explosive material.

374, Thermal Measuring and Testing, subclass 106 and 160 for fusible thermometers.

**591 Containing pressurized fluid:**

This subclass is indented under subclass 590. Subject matter wherein the sensor contains fluid under a pressure higher than that of the ambient so as to produce a pressure drop upon destruction of the sensor element.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

626, for a pressure responsive indicator, per se.

SEE OR SEARCH CLASS:

169, Fire Extinguishers, subclasses 56+ having various fusible and frangible condition responsive controls.

239, Fluid Sprinkling, Spraying, and Diffusing, subclass 71 for sprinkling systems with indicators.

**592 Expanding fluid sensor:**

This subclass is indented under subclass 584. Subject matter wherein the thermal condition is sensed by the expansion of a given mass of fluid.

(1) Note. The expansion may be sensed by an increase in either pressure or volume.

SEE OR SEARCH CLASS:

337, Electricity: Electrothermally or Thermally Actuated Switches, subclasses 306+ for an expanding fluid actuated thermally responsive switch.

374, Thermal Measuring and Testing, subclasses 201+ for an expanding fluid thermometer.

**593 Switch sensor:**

This subclass is indented under subclass 584. Subject matter wherein the sensor includes a mechanical element movable in response to the thermal condition and which element makes or breaks an electric circuit.

SEE OR SEARCH CLASS:

337, Electricity: Electrothermally or Thermally Actuated Switches, subclasses 382+ for a thermally actuated switch with a longitudinally expansible solid element.

374, Thermal Measuring and Testing, subclasses 187+ for an expanding solid actuated thermometer.

**594 With bimetallic element:**

This subclass is indented under subclass 593. Subject matter wherein the mechanical element is, or is moved by, an element formed of two joined materials having different coefficients of thermal expansion.

SEE OR SEARCH CLASS:

337, Electricity: Electrothermally or Thermally Actuated Switches, subclasses 333+ for a thermally actuated switch with a bimetallic element.

374, Thermal Measuring and Testing, subclasses 205+ for a thermometer having a bimetallic element.

**595 Current modifier or generator:**

This subclass is indented under subclass 584. Subject matter wherein the thermal condition is detected by a sensor effecting a thermally responsive modification or generation of electric current in a circuit.

## SEE OR SEARCH CLASS:

- 136, Batteries: Thermoelectric and Photoelectric, subclasses 200+ for thermoelectric elements, per se.
- 338, Electrical Resistors, subclasses 25+ for temperature-responsive resistors, per se.
- 361, Electricity: Electrical Systems and Devices, subclass 282 for thermally variable capacitors, per se.
- 374, Thermal Measuring and Testing, subclasses 163+ for a thermometer with an electric sensor, particularly subclasses 179+ for a thermoelectric sensor thermometer, and subclasses 183+ for a current modifying sensor thermometer.

**596 Cable or elongated probe:**

This subclass is indented under subclass 595. Subject matter wherein the sensor is in the form of a current carrying cable or a probe sensing the thermal condition over its length which is large compared to its other dimensions.

- (1) Note. Cable-type sensors are frequently utilized to determine the presence of an overtemperature condition in any of a plurality of zones monitored thereby.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 517+, for a system with plural sensors in plural zones with a particular relationship therebetween.

**597 Curie point sensor:**

This subclass is indented under subclass 595. Subject matter wherein the sensor has a spontaneous ferroelectric or ferromagnetic polarization at some temperature, and detects thermal conditions by the change or disappearance of such polarization due to said conditions.

## SEE OR SEARCH CLASS:

- 374, Thermal Measuring and Testing, subclasses 176+ for a thermometer with a sensor having spontaneous polarization (e.g., ferroelectric, ferromagnetic).

**598 Barrier-layer sensor:**

This subclass is indented under subclass 595. Subject matter wherein the sensor is composed of semiconductor material and has a barrier layer therein.

## SEE OR SEARCH CLASS:

- 257, Active Solid-State Devices (e.g., Transistors, Solid-State Diodes), subclasses 53 through 56, 108, 414, and 467 through 470 for such devices used as temperature sensors.
- 374, Thermal Measuring and Testing, subclass 178 for a thermometer having a semiconductor junction device sensing element.

**599 Bridge circuit:**

This subclass is indented under subclass 595. Subject matter wherein the sensor is part of a bridge circuit.

## SEE OR SEARCH CLASS:

- 323, Electricity: Power Supply or Regulation Systems, subclass 365 for a Wheatstone bridge.

**600 Radiant energy:**

This subclass is indented under subclass 540. Subject matter wherein the condition is a predetermined level of radiation.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 578, for flame detection using radiant energy.
- 584+, for detecting heat levels by thermally emitted radiant energy.

## SEE OR SEARCH CLASS:

- 219, Electric Heating, subclass 248 for a heating device combined with a sole plate-type pressure application means (e.g., a flatiron, etc.) including a condition-responsive indicator, subclass 445.1 for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including an indicator, or subclasses 446.1+ for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including a sensing means.



- 250, Radiant Energy, subclasses 336.1+ for invisible radiant energy responsive electric signalling; and subclasses 200+ for photocell circuitry.
- 356, Optics: Measuring and Testing, subclasses 219+ for photoelectric photometers.
- 601 Meteorological condition:**  
This subclass is indented under subclass 540. Subject matter wherein the condition is an atmospheric phenomenon.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
584, for a similar device monitoring temperature.
- SEE OR SEARCH CLASS:  
73, Measuring and Testing, subclasses 170.16+ for measurement of meteorological conditions.
- 602 Moisture or humidity (e.g., rain):**  
This subclass is indented under subclass 601. Subject matter wherein the meteorological condition is the presence of a predetermined amount of water or water vapor.
- (1) Note. Dew point alarm systems are classified herein.
- SEE OR SEARCH CLASS:  
73, Measuring and Testing, subclass 170.17 for a rain gauge; and subclasses 335.08+ for a humidity measuring device.
- 603 Fluent material:**  
This subclass is indented under subclass 540. Subject matter wherein the monitored condition is a condition or characteristic of flowable material.
- SEE OR SEARCH CLASS:  
137, Fluid Handling, subclasses 551+ for this subject matter combined with specific fluid handling structure.  
239, Fluid Sprinkling, Spraying, and Diffusing, subclasses 71+ for such subject matter particularly described and combined with a signal or indicator.
- 604 Wetness:**  
This subclass is indented under subclass 603. Subject matter responsive to the presence of water or water vapor.
- (1) Note. The water or vapor may be entrained in a solid, flowable material, or another liquid.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
602, for such water detection as, or as related to, a meteorological condition.  
603, for an alarm system responsive to a liquid contaminant other than water.
- SEE OR SEARCH CLASS:  
73, Measuring and Testing, subclasses 73+ for measurement of the moisture content of material.  
324, Electricity: Measuring and Testing, subclasses 664+ and 694+ for moisture content measurement by capacitance and resistance, respectively.
- 605 Leakage:**  
This subclass is indented under subclass 603. Subject matter wherein the monitored condition of the fluent material is the escape thereof from a specified containing device.
- SEE OR SEARCH CLASS:  
73, Measuring and Testing, subclasses 40+ for testing for leakage with fluid pressure.  
374, Thermal Measuring and Testing, subclasses 4+ for making a thermal test for leakage.
- 606 Flow rate:**  
This subclass is indented under subclass 603. Subject matter wherein the monitored condition is the amount of material flowing past a point in a given time interval.
- SEE OR SEARCH CLASS:  
116, Signals and Indicators, subclass 112 and 264+ for mechanical fluid flow alarms and indicators, respectively.  
137, Fluid Handling, subclasses 551+ for similar devices combined with significant fluid handling structure.

**607 Filter clogging:**

This subclass is indented under subclass 606. Subject matter wherein the flow is monitored to indicate blockage of a filter in the flow path.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

608, for flow stoppage indication in general.

SEE OR SEARCH CLASS:

210, Liquid Purification or Separation, subclasses 85+ for matter of that class combined with alarm or signal means.

**608 Stoppage:**

This subclass is indented under subclass 606. Subject matter wherein the predetermined condition indicated is the cessation of the monitored flow.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclasses 551+ for indicator or alarm in a fluid handling system.

**609 Counting:**

This subclass is indented under subclass 606. Subject matter wherein the flow rate is determined by counting individual units of the fluent material (i.e., bubbles, drops, and particles).

SEE OR SEARCH CLASS:

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 21 for fluid parameter counters with indicators.

**610 Vane in flow path:**

This subclass is indented under subclass 606. Subject matter wherein the flow is sensed by the deflection of a solid element which extends transversely through the flow path.

**611 Pressure:**

This subclass is indented under subclass 606. Subject matter wherein the flow rate is detected by monitoring a pressure related thereto.

(1) Note. The monitored pressure may be a pressure difference.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

626, for monitoring pressure in general.

**612 Material level:**

This subclass is indented under subclass 603. Subject matter wherein the monitored conditions is the height of the material with respect to a reference position.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 290+ for measurement of liquid or dry fluent material level.

164, Metal Founding, subclasses 155.2+ for a metal casting apparatus including control means responsive to material level.

200, Electricity: Circuit Makers and Breakers, subclasses 61.2+ for level responsive switch, per se.

**613 Weight in container:**

This subclass is indented under subclass 612. Subject matter wherein the material level is sensed by a force sensor responsive to the weight of material in a container.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

666+, for weight responsive alarm systems, in general.

**614 Pressure:**

This subclass is indented under subclass 612. Subject matter wherein the level is sensed by the pressure exerted by a fluid on a sensor, and includes differential pressure sensed by plural sensors.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

626, for pressure monitoring of general utility.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 299+ for liquid level measurement by pressure head measurement.

**615 Moving sensor (e.g., impeller):**

This subclass is indented under subclass 612. Subject matter wherein the presence or absence of material at the sensor is detected by the affect (e.g., damping) of the material on the motion of the sensor.

- (1) Note. The term “motion” used above is also intended to encompass vibration of low amplitude.
- (2) Note. The sensor is often an impeller.

SEE OR SEARCH THIS CLASS, SUBCLASS:  
582, for a vibratory ice condition sensor.

**616 Overflow:**

This subclass is indented under subclass 612. Subject matter wherein the level is detected by overflowing of a full container, or of flow in an overflow discharge form a container.

- (1) Note. The mere use of the term “overflow” does not automatically result in classification herein.

**617 Pulverant material (e.g., bin):**

This subclass is indented under subclass 612. Subject matter wherein the fluent material is a granular or powdered solid.

- (1) Note. The solid material is often in a bin or similar receptacle.

SEE OR SEARCH CLASS:  
73, Measuring and Testing, subclasses 290+ for pulverant material measurement, as set forth in (3) Note.

**618 Liquid:**

This subclass is indented under subclass 612. Subject matter wherein the fluent material is a liquid.

SEE OR SEARCH CLASS:  
73, Measuring and Testing, subclasses 290+ for liquid level measurement.  
137, Fluid Handling, subclass 392 for a liquid level responsive system sensing an electrical characteristic.

**619 Optical sensor:**

This subclass is indented under subclass 618. Subject matter wherein the liquid level is detected by a device responsive to or conducting light rays.

SEE OR SEARCH CLASS:

- 250, Radiant Energy, subclasses 564+ and 577 for a prephotocell or optical system responsive to liquid level, but not including a claimed indicating means.

**620 Electrode probe:**

This subclass is indented under subclass 618. Subject matter having a sensor containing one or more conductive elements for passing current through the liquid.

- (1) Note. Such current includes displacement current of a capacitive arrangement.

SEE OR SEARCH CLASS:

- 73, Measuring and Testing, subclass 304 for similar sensors in liquid level measuring circuits.
- 338, Electrical Resistors, subclass 38 for resistive level sensors, per se.
- 361, Electricity: Electrical Systems and Devices, subclass 284 for capacitive level sensors, per se.

**621 Having sonic sensor:**

This subclass is indented under subclass 618. Subject matter wherein the liquid level is detected by a vibration responsive element, which may include a vibration transmitting element.

SEE OR SEARCH CLASS:

- 73, Measuring and Testing, subclass 290 for vibratory type liquid level measuring devices.
- 310, Electrical Generator or Motor Structure, subclasses 311+ for piezoelectric vibration transducers, per se.
- 367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 99+ for liquid level measuring means.

**622 Having heat sensor:**

This subclass is indented under subclass 618. Subject matter wherein the liquid level is detected by a thermally responsive sensor.

**SEE OR SEARCH CLASS:**

122, Liquid Heaters and Vaporizers, subclass 504.2 for boiler alarm or indicator thermally responsive to steam when water level falls below a certain limit.

**623 Float sensor:**

This subclass is indented under subclass 618. Subject matter wherein the liquid level is sensed by the position of a buoyant object floating on the liquid surface.

**SEE OR SEARCH CLASS:**

73, Measuring and Testing, subclass 308 for the combination of a float-type liquid level measuring device and an electrical signal or alarm.  
200, Electricity: Circuit Makers and Breaker, subclass 84 for float actuated switches.

**624 Vertically reciprocable:**

This subclass is indented under subclass 623. Subject matter wherein the float has no horizontal component of motion.

**SEE OR SEARCH CLASS:**

73, Measuring and Testing, subclass 319 for a vertically reciprocable float operated liquid level measuring device.

**625 Pivoted arm:**

This subclass is indented under subclass 623. Subject matter wherein the float is rigidly attached to an arm connected to a pivot so as to restrict the motion of the float to an arcuate path centered at the pivot.

**SEE OR SEARCH CLASS:**

73, Measuring and Testing, subclasses 317+ for a pivoted float arm operated liquid level measuring device.

**626 Pressure:**

This subclass is indented under subclass 603. Subject matter wherein the monitored condition is the pressure of the fluent material.

**SEE OR SEARCH CLASS:**

73, Measuring and Testing, subclasses 700+ for fluid pressure gauges.  
200, Electricity: Circuit Makers and Breakers, subclasses 81+ for pressure responsive switches.

**627 Particle suspension in fluid:**

This subclass is indented under subclass 603. Subject matter wherein the fluent material has particulate matter entrained therein.

**SEE OR SEARCH CLASS:**

73, Measuring and Testing, subclass 23.33 for gas analysis for solid matter; and subclasses 53.01+ for measuring particles in a liquid suspension.  
356, Optics: Measuring and Testing, subclasses 441+ for an optical transmission or absorption liquid particle suspension measuring device.

**628 Smoke:**

This subclass is indented under subclass 627. Subject matter wherein particle suspension is in a gas, and is generally the result of combustion.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

577, for the detection of a flame.  
584, for the detection of smoke by the thermal properties thereof.

**SEE OR SEARCH CLASS:**

200, Electricity: Circuit Makers and Breakers, subclass 61.03 for a smoke operated switch.

**629 Ionization:**

This subclass is indented under subclass 628. Subject matter wherein the smoke detector responds to ionization of the smoke caused by an applied electric field or a radioactive source.

**SEE OR SEARCH CLASS:**

250, Radiant Energy, subclass 381 for ionization-type signalling circuits, per se.

**630 Photoelectric:**

This subclass is indented under subclass 628. Subject matter wherein the sensor is a photodetector responsive to the optical properties of smoke.

**SEE OR SEARCH CLASS:**

- 250, Radiant Energy, subclasses 573.1+ for photocell actuated, fluent material detecting circuit.
- 356, Optics: Measuring and Testing, subclasses 438+ for an optical transmission or absorption smoke measuring device.

**631 Lubricant:**

This subclass is indented under subclass 627. Subject matter wherein the particle suspension is in, or of, a lubricating liquid for a mechanical device.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 682, for bearing condition in general.

**SEE OR SEARCH CLASS:**

- 73, Measuring and Testing, subclass 53.05 for lubricant testing.

**632 Gas:**

This subclass is indented under subclass 603. Subject matter wherein the fluent material is a gas.

**SEE OR SEARCH CLASS:**

- 73, Measuring and Testing, subclasses 23.2+ for gas analysis.
- 200, Electricity: Circuit Makers and Breakers, subclass 61.03 for a gas operated switch.
- 356, Optics: Measuring and Testing, subclasses 213+ and 300+ for spectroscopy and photometers respectively.

**633 Catalytic detector:**

This subclass is indented under subclass 632. Subject matter wherein the gas sensor includes a catalyst to induce a chemical reaction producing a parameter to which the sensor is responsive (e.g., heat).

- (1) Note. The sensor is often coated with the catalyst and is thermally responsive.

**SEE OR SEARCH CLASS:**

- 422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, subclasses 83+ for gas analysis apparatus utilizing a chemical reaction.
- 436, Chemistry: Analytical and Immunological Testing, subclasses 68+ for gas analysis utilizing a chemical reaction.

**634 Semiconductor detector:**

This subclass is indented under subclass 632. Subject matter wherein the detector is composed of material having an electrical conductivity between that of metals and that of insulators, and which conductivity increases in the presence of a sensed gas.

- (1) Note. The sensor may include a heating element to raise its temperature to the appropriate operating range.

**SEE OR SEARCH CLASS:**

- 338, Electrical Resistors, subclass 34 for a gas responsive resistor.

**635 Condition of electrical apparatus:**

This subclass is indented under subclass 540. Subject matter wherein the monitored condition is an electrical property of a specific electrical device or circuit.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 506+, for an electrical alarm circuit or element, the integrity of which is monitored.
- 584+, for monitoring the thermal characteristics of electrical devices.
- 657+, for characteristics of electricity, per se, not representative of the condition of a particular device.

**SEE OR SEARCH CLASS:**

- 219, Electric Heating, subclass 248 for a heating device combined with a sole plate-type pressure application means (e.g., a flatiron, etc.) including a condition-responsive indicator, subclass 445.1 for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including an indicator,

- subclasses 446.1+ for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including a sensing means, or subclass 506 for a heating device having automatic regulating or control of power supply and voltage including signal or indicator means.
- 324, Electricity: Measuring and Testing, subclasses 403+ for testing of electric lamp or discharge devices; and subclasses 415+ for the testing of electro-mechanical switching devices.
- 636 Battery:**  
This subclass is indented under subclass 635. Subject matter where the device is a battery.
- SEE OR SEARCH CLASS:  
320, Electricity: Battery or Capacitor Charging or Discharging, appropriate subclass for a battery or capacitor charging or discharging circuit combined with an indicator.  
429, Chemistry: Electrical Current Producing Apparatus, Product, and Process, subclasses 90+ for testing and indicating where specific battery structure is claimed.
- 637 Watt-hour meter:**  
This subclass is indented under subclass 635. Subject matter where the monitored device is a watt-hour meter.
- (1) Note. This subclass pertains to a meter condition, not power consumption, per se.
- SEE OR SEARCH CLASS:  
324, Electricity: Measuring and Testing, subclass 74 for testing watt-hour meters.
- 638 Fuse or circuit breaker:**  
This subclass is indented under subclass 635. Subject matter where the device is current level responsive circuit interrupting device.
- SEE OR SEARCH CLASS:  
324, Electricity: Measuring and Testing, subclasses 424+ for the testing of circuit breakers.
- 335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclass 17 for electromagnetic circuit breakers with integral signaling, indicating, or alarm means.
- 337, Electricity: Electrothermally or Thermally Actuated Switches, subclass 206 for fusible element actuated switches with integral indicator; subclass 241 for cartridge fuses with integral indicators; and subclass 265 for plug fuses with integral indicators.
- 639 Plural:**  
This subclass is indented under subclass 638. Subject matter where plural fuses or circuit breakers are monitored.
- 640 Heater element:**  
This subclass is indented under subclass 635. Subject matter where the monitored device is an electric heating element.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
584+, for monitoring the thermal condition of an electric heater.
- SEE OR SEARCH CLASS:  
219, Electric Heating, subclass 248 for a heating device combined with a sole plate-type pressure application means (e.g., a flatiron, etc.) including a condition-responsive indicator, subclass 269 for an igniter-type resistive element indicating means, subclass 445.1 for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including an indicator, subclasses 446.1+ for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including a sensing means, subclass 487 for a heating device having a power supply and voltage or current regulation or current control means to control or regulate plural separate distinct heating resistance elements (i.e., one control system for all elements, etc.) selectively, sequentially, or alternately including indicator means, or subclass 506 for a heating device having a power supply with automatic

regulation of its voltage or current including signal or indicator means.

**641 Signalling light element:**

This subclass is indented under subclass 635. Subject matter wherein the monitored device is an electric signalling light.

- (1) Note. Any claimed signalling function is sufficient for classification herein.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

458, for a light monitoring system in a specified vehicle.

SEE OR SEARCH CLASS:

315, Electric Lamp and Discharge Devices: Systems, subclasses 88+ for automatic filament substitution; subclass 120 for a nonsignalling lamp system having an indicator and an automatic shunt or cut-out; and subclasses 129+ for a nonsignalling; e.g., illuminating, lamp system with indicators.

324, Electricity: Measuring and Testing, subclass 403 for lamp testing.

**642 Plural bulbs or filaments:**

This subclass is indented under subclass 641. Subject matter where plural lights are monitored.

**643 Thermal or magnetic current sensors:**

This subclass is indented under subclass 641. Subject matter where the condition of the light is sensed by means responsive to the thermal or magnetic effects of current flow through a conductor connected to the light being monitored.

**644 Switch or relay:**

This subclass is indented under subclass 635. Subject matter wherein the monitored device is a circuit interrupter, and may be manually or automatically actuated.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

286.04+, for a manually actuated switch controlled alarm system.

540+, for switch-type sensors actuated in response to a specified condition and placed in an alarm or indicator circuit.

638+, for monitoring a circuit breaker.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclass 312 for significant switch structure combined with an indicator for its condition.

307, Electrical Transmission or Interconnection Systems, subclasses 116+ for condition responsive switching systems.

324, Electricity: Measuring and Testing, subclasses 415+ for contact, relay, and switch testing.

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous signal systems.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclass 17 for significant relay structure combined with indicator for its condition.

361, Electricity: Electrical Systems and Devices, subclasses 139+ for a relay control circuit.

**645 Rectifier:**

This subclass is indented under subclass 635. Subject matter wherein the monitored device is a rectifier or a plurality of rectifiers.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous circuits which may include a rectifier.

363, Electric Power Conversion Systems, appropriate subclasses for the details of rectification systems.

**646 Transformer:**

This subclass is indented under subclass 635. Subject matter where the monitored device is a transformer.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

584+, for alarms responsive to thermal condition of a transformer.

- SEE OR SEARCH CLASS:  
324, Electricity: Measuring and Testing, subclass 726 for transformer testing.
- 361, Electricity: Electrical Systems and Devices, subclasses 35+ for transformer safety systems and subclass 93.6 for abnormal current condition detection using transformer sensor.
- 647 Insulation:**  
This subclass is indented under subclass 635. Subject matter where the monitored device is electrical insulation.
- SEE OR SEARCH CLASS:  
324, Electricity: Measuring and Testing, subclass 541 for insulation testing.
- 648 Motor:**  
This subclass is indented under subclass 635. Subject matter where the monitored device is an electric motor.
- SEE OR SEARCH CLASS:  
318, Electricity: Motive Power Systems, subclass 490 for similar subject matter combined with motor control systems.
- 649 Condition of intentional grounding circuit:**  
This subclass is indented under subclass 635. Subject matter where the monitored device is an intentional grounding circuit, (i.e., a protective ground).
- SEE OR SEARCH CLASS:  
324, Electricity: Measuring and Testing, subclasses 500+ for circuit fault testing.
- 361, Electricity: Electrical Systems and Devices, subclasses 42+ for ground fault protection systems.
- 650 Undesired circuit ground or short:**  
This subclass is indented under subclass 635. Subject matter where the condition monitored is an unwanted grounding or short circuiting of a power or signal conductor.
- SEE OR SEARCH CLASS:  
324, Electricity: Measuring and Testing, subclasses 509+ for circuit grounding detectors that are used for occasional testing as distinguished from continuously monitoring for an alarm condition.
- 651 For plural circuit conductors:**  
This subclass is indented under subclass 650. Subject matter where plural conductors are monitored.
- 652 Breaking of circuit continuity:**  
This subclass is indented under subclass 635. Subject matter where the condition monitored is the integrity of a circuit; e.g., power or communication lines.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
506, for monitoring alarm circuit continuity.
- 649, for ground circuit continuity alarm.
- SEE OR SEARCH CLASS:  
324, Electricity: Measuring and Testing, subclasses 539+ for circuit continuity testing as distinguished from continuously monitoring for an alarm condition.
- 653 Electronic circuit or component:**  
This subclass is indented under subclass 635. Subject matter where the device is an active electronic circuit or component; e.g., amplifier, vacuum tube, or transistor.
- (1) Note. Significant art structure with indicating device will classify claimed subject matter with art structure as pointed out in (2) Note of the general class definitions of this class (340).
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
654, for monitoring of energization of a component.
- SEE OR SEARCH CLASS:  
330, Amplifiers, subclass 2 for amplifiers with indicating means.
- 331, Oscillators, subclass 64 for oscillators with alarms.



- 377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclasses 112+ for electrically operated registers with indicators.
- 654 Circuit energization:**  
This subclass is indented under subclass 635. Subject matter where the condition monitored is the state of power energization of a circuit (e.g., off or on).
- (1) Note. Nominal recitation of a pilot light in an art device will not be classified herein.
- 655 Heating circuit:**  
This subclass is indented under subclass 654. Subject matter where the monitored circuit includes an electric heater.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
640, for monitoring the condition of a heater element.
- SEE OR SEARCH CLASS:  
219, Electric Heating, subclass 109 for a current supply indicator (e.g., a recorder, etc.) to a metal heating (e.g., resistance heating, etc.) pressure bonding (e.g., resistance welding, etc.) apparatus, subclass 248 for a heating device combined with a sole plate-type pressure application means (e.g., a flatiron, etc.) including a condition-responsive indicator, subclass 445.1 for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including an indicator, subclasses 446.1+ for an exposed planar support surface for material to be heated (e.g., hot plate, etc.) including a sensing means, subclass 487 for a heating device having a power supply and voltage or current regulation or current control means to control or regulate plural separate distinct heating resistance elements (i.e., one control system for all elements, etc.) selectively, sequentially, or alternately including indicator means, or subclass 506 for a heating device having automatic regulating or control means of power supply and voltage including signal or indicator means.
- 656 Electrical socket:**  
This subclass is indented under subclass 654. Subject matter where the circuit is monitored at an electrical socket and the condition may be whether the socket or load plugged into the socket is energized.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
687, for indication of mechanical connection of electrical connectors.
- SEE OR SEARCH CLASS:  
324, Electricity: Measuring and Testing, subclass 133 for testing devices for polarity and hot-line indication.  
439, Electrical Connectors, subclasses 488+ for an electrical connector combined with an indicating or identifying means.
- 657 Electrical characteristic:**  
This subclass is indented under subclass 540. Subject matter where the condition monitored is a characteristic of electricity, per se, (i.e., power delivered, electric charge), rather than of a particular circuit.
- SEE OR SEARCH CLASS:  
307, Electrical Transmission or Interconnection Systems, subclasses 125+ for switching systems that are responsive to electrical conditions.  
324, Electricity: Measuring and Testing, subclasses 76.11+ for measuring, testing, or sensing electricity, per se.  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 1+ for miscellaneous discriminating circuits.  
361, Electricity: Electrical Systems and Devices, subclasses 182+ for relay systems that are electrical characteristic responsive.
- 658 Phase or frequency:**  
This subclass is indented under subclass 657. Subject matter where the monitored characteristic is electrical phase or frequency.

- SEE OR SEARCH CLASS:  
324, Electricity: Measuring and Testing, subclasses 76.39+ and 76.77+ for frequency and phase measurement, respectively.
- 659 Pulse or surge:**  
This subclass is indented under subclass 657. Subject matter where the monitored characteristic is the occurrence of an electrical pulse or surge (i.e., pulse occurrence or absence, width, lightning stroke).
- SEE OR SEARCH CLASS:  
324, Electricity: Measuring and Testing, subclasses 72+ for testing potential in a specific environment (e.g., lightning stroke).
- 660 Voltage:**  
This subclass is indented under subclass 657. Subject matter where the monitored characteristic is the electrical potential at a point in a current carrying circuit.
- SEE OR SEARCH CLASS:  
324, Electricity: Measuring and Testing, subclass 72.5 for a voltage probe in a specific environment; subclasses 76.11+ for voltage measurement absent a significant tangible environment, and particularly subclass 133 for a test with a nonquantitative indication.
- 661 Comparison:**  
This subclass is indented under subclass 660. Subject matter where the voltage is monitored by comparison with another voltage or a reference.
- SEE OR SEARCH CLASS:  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 50+ for miscellaneous specific amplitude discriminating circuits.
- 662 Overvoltage:**  
This subclass is indented under subclass 660. Subject matter where the voltage exceeds a specified level.
- 663 Undervoltage:**  
This subclass is indented under subclass 660. Subject matter where the voltage falls below a specified level.
- 664 Current:**  
This subclass is indented under subclass 657. Subject matter where the sensed characteristic is the rate of flow of electrical charge with respect to time.
- SEE OR SEARCH CLASS:  
324, Electricity: Measuring and Testing, subclasses 76.11+ for current measurement and testing absent a significant tangible environment, and particularly subclass 133 for a non-quantitative indication.
- 665 Force or stress:**  
This subclass is indented under subclass 540. Subject matter where the condition is a mechanical force or stress.
- SEE OR SEARCH CLASS:  
73, Measuring and Testing, subclasses 760+ for stress measurement; and subclasses 862.381+ for force measurement.
- 666 Weight:**  
This subclass is indented under subclass 665. Subject matter where the force is gravitationally induced.
- SEE OR SEARCH CLASS:  
177, Weighing Scales, subclasses 45+ for alarms on scales.  
200, Electricity: Circuit Makers and Breakers, subclasses 85+ for weight sensing switches.
- 667 On seat:**  
This subclass is indented under subclass 666. Subject matter wherein the sensor responds to weight upon the weight bearing surface of a seat.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
438, and 457.1, for this subject matter in a vehicle.

**668 Tension:**

This subclass is indented under subclass 665. Subject matter where the force exists in tension.

**SEE OR SEARCH CLASS:**

- 43, Fishing, Trapping, and Vermin Destroying, subclass 17 for indicating tension as the result of a fish being hooked on a fishing line.
- 73, Measuring and Testing, subclass 761 for fastener stress.
- 242, Winding, Tensioning, or Guiding, subclass 357, 472.0+, 479.9+, 484.8, 484.9+, 534+, 563+, and 912 for a detector, signal, or indicator associated with winding or unwinding an elongated material, which material is frequently under a tension control, and subclasses 410+ for regulating tension in a running length of elongated material.

**669 Acceleration:**

This subclass is indented under subclass 540. Subject matter wherein the sensed condition is a change in velocity with respect to time.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 429, 436 and 463, for acceleration responsive signalling systems in vehicles.

**SEE OR SEARCH CLASS:**

- 73, Measuring and Testing, subclass 488 for measurement of acceleration.
- 200, Electricity: Circuit Makers and Breakers, subclasses 61.45+ for acceleration responsive switches.
- 324, Electricity: Measuring and Testing, subclass 162 for acceleration measuring means combined with electrical speed measurement.

**670 Velocity:**

Subject matter under 540 wherein the sensed condition is the change in position of a specified object with respect to time.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 441, and 463+, for a speed signalling system in a vehicle.

**SEE OR SEARCH CLASS:**

- 73, Measuring and Testing, subclasses 488+ for speed measurement.
- 324, Electricity: Measuring and Testing, subclasses 160+ for electrical speed measurement.

**671 Angular:**

This subclass is indented under subclass 670. Subject matter where the velocity is angular.

**SEE OR SEARCH CLASS:**

- 246, Railway Switches and Signals, subclass 168.1 for wheel slip indicators for rail locomotives.

**672 Direction of shaft rotation:**

This subclass is indented under subclass 671. Subject matter wherein the monitored angular velocity is characterized by direction of rotation of a shaft.

**SEE OR SEARCH CLASS:**

- 116, Signals and Indicators, subclasses 200+ for a mechanical shaft rotation indicator.

**673 Article transport:**

This subclass is indented under subclass 540. Subject matter where the condition is of an object moving along a constrained path.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 933+, for traffic detection and signalling systems.

**SEE OR SEARCH CLASS:**

- 198, Conveyors: Power-Driven, subclass 340 for signalling means at a station along a conveyor path; and subclass 502.01 for a conveyor or load alarm or indicator.

**674 Discrete articles:**

This subclass is indented under subclass 673. Subject matter where the object has discrete boundaries which pass the point at which the condition is observed.

## SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 222.1 for photocell circuits for detecting article passage.

**675 Web, film, or strip:**

This subclass is indented under subclass 673. Subject matter where the moving object is a continuous web, film, or strip.

## SEE OR SEARCH CLASS:

73, Measuring and Testing, subclass 157 for film sprocket hole testing; and subclasses 159+ for sheet, woven fabric, or fiber testing.  
 242, Winding, Tensioning, or Guiding, subclass 357, 472.0+, 479.9+, 484.8, 484.9+, 534+, and 563+ for a detector or stop associated with winding or unwinding an elongated material.  
 250, Radiant Energy, subclass 548 and 559.01+ for photocell circuits for detecting a web, strip, or sheet.

**676 Conveyor belt:**

This subclass is indented under subclass 675. Subject matter where the web is a conveyor belt.

(1) Note. This subclass relates to the condition of the conveyor belt, not to the articles thereupon.

**677 Strand:**

This subclass is indented under subclass 673. Subject matter where the object is a continuous strand (e.g., thread, rope, wire).

## SEE OR SEARCH CLASS:

57, Textiles: Spinning, Twisting, and Twining, subclass 81 for stopping and starting control.  
 66, Textiles: Knitting, subclass 163 for strand stop control.  
 250, Radiant Energy, subclass 548 and 559.01+ for photocell circuits responsive to a web, strand, strip, or sheet.

**678 Of geometrical gauge:**

This subclass is indented under subclass 540. Subject matter where the condition is determined by monitoring the size or shape of an object.

## SEE OR SEARCH CLASS:

33, Geometrical Instruments, appropriate subclasses for measuring or gauging means with electrical indicators.  
 73, Measuring and Testing, subclass 104 for surface or cutting edge testing.

**679 Machine condition:**

This subclass is indented under subclass 540. Subject matter wherein the monitored condition is that of a particular mechanical device or component thereof.

**680 Machine tool:**

This subclass is indented under subclass 679. Subject matter where the machine component monitored is a tool (e.g., drill bit or cutting tool).

## SEE OR SEARCH CLASS:

173, Tool Driving or Impacting, subclasses 20+ for a tool driving device with indicating or signalling means.

**681 Synchronization:**

This subclass is indented under subclass 679. Subject matter where the condition is synchronization between mechanisms.

## SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, subclass 87 for connecting plural supply circuits or sources at correct phase relationship.  
 318, Electricity: Motive Power Systems, subclass 85 for synchronizing motors.  
 324, Electricity: Measuring and Testing, subclasses 378+ for ignition timing.  
 375, Pulse or Digital Communications, subclass 106 for synchronizers.

**682 Bearing:**

This subclass is indented under subclass 679. Subject matter where the machine component is a bearing.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

584, and 600, for temperature monitoring of bearings.  
 631, for bearing particles in oil.

**683     Vibration:**

This subclass is indented under subclass 679. Subject matter where the condition is a vibration.

SEE OR SEARCH THIS CLASS, SUBCLASS:

566,     for intrusion vibration responsive systems.

SEE OR SEARCH CLASS:

73,     Measuring and Testing, subclasses 570+ for vibration measurement and testing.

**684     Agricultural:**

This subclass is indented under subclass 679. Subject matter where the machine is an agricultural machine.

SEE OR SEARCH CLASS:

56,     Harvesters; 111, Planting; and 460, Crop Threshing or Separating, appropriate subclasses for detailed structure thereof.

**685     Cranes:**

This subclass is indented under subclass 679. Subject matter where the machine is a crane.

SEE OR SEARCH THIS CLASS, SUBCLASS:

668,     for cable tension in cranes.

SEE OR SEARCH CLASS:

212,     Traversing Hoists, subclasses 276+ for automatic stop control for cranes, and other condition sensors which regulates an indicator, alarm, or controller. Class 212 takes condition responsive indicator systems claimed in combination with any structural details of a crane.

**686.1   Position responsive:**

This subclass is indented under subclass 540. Subject matter responsive to a standing point of one object relative to another.

SEE OR SEARCH CLASS:

137,     Fluid Handling, subclasses 553+ for a position or extent of motion indicator

or alarm combined with a fluid handling means such as a valve.

219,     Electric Heating, subclass 121.3 and 121.32 for nonalarm position responsive in metal heating by electron beam.

700,     Data Processing: Generic Control Systems or Specific Applications, subclasses 186 through 193 for machining digital positioning technique using data processing.

**686.2   Alignment or misalignment:**

This subclass is indented under subclass 686.1. Subject matter wherein indication is provided when two or more elements come into a relative position in (a) a precise adjusting, or (b) unprecise adjusting manner.

**686.3   Shaft or rotary element:**

This subclass is indented under subclass 686.1. Subject matter wherein an indication is provided when a particular point is reached along the circumference of a cylindrical bar which supports or transmits motion by rotation.

**686.4   One article inserted into another:**

This subclass is indented under subclass 686.1. Subject matter wherein two elements which normally interact by one being placed inside the other, and an indication is provided either in response to this occurrence or some particular condition of this occurrence (e.g., improper insertion).

**686.5   Workpiece:**

This subclass is indented under subclass 686.1. Subject matter including an element which is in the process of being manufactured, and wherein the indicating system monitors whether the element is in a proper position to be worked on.

SEE OR SEARCH CLASS:

219,     Electric Heating, subclass 121.32 for nonalarm workpiece position responsive in metal heating by electron beam.

700,     Data Processing: Generic Control Systems or Specific Applications, subclasses 186 through 193 for machining digital positioning technique using data processing.

**686.6 Proximity or distance:**

This subclass is indented under subclass 686.1. Subject matter responsive to an object coming too close to, or moving too far away from, another object.

- (1) Note. This subclass requires that two objects maintain a predetermined maximum or minimum distance from each other.

**SEE OR SEARCH CLASS:**

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclass 517 for generic transistor circuitry responsive to proximity or touch.

**687 Connected or disconnected:**

This subclass is indented under subclass 686.1. Subject matter responsive to the mechanical connection of two or more objects.

- (1) Note. The system may, for example, be responsive to the mechanical connection of electrical connectors.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

431, for trailer signal light systems and hitch alignment devices.

**SEE OR SEARCH CLASS:**

200, Electricity: Circuit Makers and Breakers, subclasses 51+ for connector actuated switches.  
307, Electrical Transmission and Interconnection Systems, subclass 9.1 for vehicle-to-trailer electrical interconnection systems which may include an alarm or indicator of connection or disconnection.

**688 Meter dial:**

This subclass is indented under subclass 686.1. Subject matter responsive to the position of a pointer on a scale.

- (1) Note. If the pointer is automatically responsive to a specified condition, the system will be found with measurement of the condition.

**689 Tilt:**

This subclass is indented under subclass 686.1. Subject matter responsive to the angular orientation of an object with respect of a predetermined reference orientation thereof.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

429, and 440, for vehicle alarms or indicators responsive to tilt of the vehicle.

**SEE OR SEARCH CLASS:**

33, Geometrical Instruments, subclass 366.11 for measuring levels with electrical indicators.  
200, Electricity: Circuit Makers and Breakers, subclass 52 for tilting vehicle operated switches; and subclasses 61.45+ for tilt operated switches.

**690 Geophysical (e.g., fault slip):**

This subclass is indented under subclass 686.1. Subject matter responsive to the position of parts of the earth relative to other parts of the earth.

- (1) Note. This subclass includes, for example, position of mine roofs, earthquake faults, etc.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

855.3, for signaling in a wellbore telemetering system.

**SEE OR SEARCH CLASS:**

73, Measuring and Testing, subclass 784 for earth stress measurement.  
166, Wells, subclass 64 for a well with time or distance measuring or temperature responsive or counting means; and subclass 66 for a well with electrical indicating means.  
175, Boring or Penetrating The Earth, subclasses 40+ for such subject matter which is particularly described and combined with signalling or indicating means.  
324, Electricity: Measuring and Testing, subclasses 323+ for determining an electrical characteristic of the subsurface of the earth, in situ.

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclass 81 for wellbore alarm systems.

**691.1 Specified indicator structure:**

This subclass is indented under subclass 500. Subject matter wherein the means translating electrical signals into humanly perceptible signals are particularly described.

- (1) Note. Mere inclusion by name only is insufficient for classification herein; detailed structure or circuitry is necessary.
- (2) Note. This subclass includes specific circuitry which provides the desired indication effects (e.g., pulsed or steady indication, bright or dim) as well as structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

384.1+, 407.1+, 815.4+, for audible, tactual, and visual indicators, respectively.

**691.2 Simulated effect:**

This subclass is indented under subclass 691.1. Subject matter where the humanly perceptible signal is intended to give the impression that a physical object is present when it actually isn't (e.g., "dummy" surveillance camera, or arrows providing direction to emergency exit).

- (1) Note. For example, a set of visual indicators are actuated in sequence to indicate a direction, thereby "simulating" a means providing an escape route during events such as a fire.

SEE OR SEARCH THIS CLASS, SUBCLASS:

384.3, for audible indication simulation.  
693.8, for specific housing simulation.

**691.3 Degree or urgency:**

This subclass is indented under subclass 691.1. Subject matter where multiple discrete stages or levels of a condition are monitored, and a different discrete humanly perceptible signal is provided for each stage or level.

- (1) Note. For example, a "pre-alarm" warning vs. an all-out alarm.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 328+, for a generic audible signaling system with degree or urgency.  
691.4, for a condition responsive with plural indicating signals.

**691.4 Plural:**

This subclass is indented under subclass 691.1. Subject matter where the system provides more than one humanly perceptible indication in response to a single condition.

- (1) Note. For example, multiple alarms in different rooms of a dwelling, each responsive to events such as intrusion or fire being sensed at any point in the dwelling.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 326+, for a generic indicating system having plural concurrent single indications.  
691.3, for a condition responsive indicating with multiple discrete human perceptible signals generated in different stages or levels.

**691.5 Diverse:**

This subclass is indented under subclass 691.4. Subject matter where at least two of the indications are of different types.

- (1) Note. For example, visual and audible, continuous light and flashing light.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 326+, for a system having plural concurrent single indications (e.g., light flashes when bell rings).  
815.69+, for a generic diverse indications.

**691.6 Information display:**

This subclass is indented under subclass 691.1. Subject matter where the humanly perceptible signal is a written message communicated via means such as an electronic sign or screen.

- (1) Note. For example, a cathode ray tube (CRT) or a liquid crystal display (LCD) is included.

## SEE OR SEARCH CLASS:

345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, appropriate subclasses for processing and control of a display system.

**691.7 Mechanical:**

This subclass is indented under subclass 691.1. Subject matter where the humanly perceptible signal, while controlled by electrical means, is itself nonelectrical in nature.

- (1) Note. For example, a deployable flag or balloon, or the release of fluent material is included.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

815.83, for a generic movable visual indication.

## SEE OR SEARCH CLASS:

116, Signal and Indicators, appropriate subclasses for a mechanical indicator without electrical control circuitry.

**691.8 Control circuit detail:**

This subclass is indented under subclass 691.1. Subject matter wherein electronic components, or an arrangement thereof for actuating the indicator, is particularly described.

**692 Sound reproducer:**

This subclass is indented under subclass 691.1. Subject matter where the humanly perceptible signal is an audible message communicated via means such as a loudspeaker.

## SEE OR SEARCH CLASS:

381, Electrical Audio Signal Processing and Systems, appropriate subclasses for audio systems in general.

**693.1 Specified power supply:**

This subclass is indented under subclass 500. Subject matter wherein either some portion of the energizing supply, or a function of the energizing supply in addition to energization, is particularly described.

- (1) Note. Power supplies included by name only are not classified herein.

- (2) Note. The additional function referred to above is generally to cope with a particular problem, e.g., switching to an alternate power supply upon failure of the main power supply.

## SEE OR SEARCH CLASS:

- 307, Electrical Transmission or Interconnection Systems, subclasses 43+ for plural supply circuits or sources for electrical transmission or interconnection in general.
- 327, Miscellaneous ActiveElectrical Non-linear Devices, Circuits, or Systems, subclasses 530+ for a specific transistor circuitry source of supply or bias voltage.
- 361, Electricity: Electrical Systems and Devices, subclasses 1+ for a power supply with a safety feature; and subclasses 600+ for a housing having diverse electrical components.
- 363, Electric Power Conversion Systems, for power supply conversion (e.g., A.C. to D.C.), generally.

**693.2 Substitute or emergency source (e.g. back-up battery):**

This subclass is indented under subclass 693.1. Subject matter wherein upon the failure of a primary power supply there is energized a secondary power supply to maintain operation of the electrical means providing the humanly perceptible signal.

## SEE OR SEARCH CLASS:

- 307, Electrical Transmission or Interconnection Systems, subclasses 64+ for substitute or emergency source in a generic plural power supply transmission system.

**693.3 Having reduced power consumption (e.g. intermittent power):**

This subclass is indented under subclass 693.1. Subject matter wherein means causing the power supply to operate at less than full strength for at least part of the time the power supply is in operation are particularly described.



**693.4 Having specified voltage regulator:**

This subclass is indented under subclass 693.1. Subject matter wherein means causing the energy output by the power supply to be at a constant level or in a consistent pattern are particularly described.

**693.5 Specified housing:**

This subclass is indented under subclass 500. Subject matter wherein some portion of the structure of a housing for the electrical means providing the humanly perceptible signal is particularly described.

**SEE OR SEARCH CLASS:**

248, Supports, subclass 542 for support with indicator or inspection means.  
361, Electricity: Electrical Systems and Devices, subclasses 679+ for electronic systems or devices housing or mounting assemblies.

**693.6 Configured to promote sensing capability (e.g., smoke detector):**

This subclass is indented under subclass 693.5. Subject matter wherein at least a portion of the housing is particularly described in such a way that a sensor inside the housing may detect a condition outside the housing.

- (1) Note. For example, the housing structure includes an element to permit air flow or radiation from outside the housing to come into contact with the sensor inside the housing.

**693.7 Inserted battery required for housing closure:**

This subclass is indented under subclass 693.6. Subject matter wherein the housing has structure preventing two or more housing portions from being properly fastened together unless the DC power supply for the electrical means providing the humanly perceptible signal is positioned in its proper place within the housing.

**693.8 Simulation:**

This subclass is indented under subclass 693.5. Subject matter wherein at least a portion of the housing is in the shape of a further object unrelated to the alarm condition but clearly recog-

nizable to a person or persons to whom the humanly perceptible signal is directed.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

691.2, for simulated effect indicator.

**693.9 Having specified mounting structure:**

This subclass is indented under subclass 693.5. Subject matter wherein means for attaching the sensor housing to a further structure, which may or may not be the object or portion of the object sensed by the sensor, are particularly described.

**693.11 To wall or ceiling:**

This subclass is indented under subclass 693.9. Subject matter wherein the further structure is a wall or ceiling.

**693.12 Within another housing:**

This subclass is indented under subclass 693.9. Subject matter wherein the further structure is the object having a condition sensed by the sensor, the object itself having an outer housing, and the sensor housing is secured within the outer housing of the object.

**815.4 VISUAL INDICATION:**

This subclass is indented under the class definition. Subject matter comprising a means for producing a visually perceptible indication of the presence, absence, or occurrence of an electrical signal.

- (1) Note. Indicators for quantitative characteristic of the electrical signal (e.g., voltage) per se, are excluded from this subclass and are classified in Class 324.
- (2) Note. The presence, absence, or occurrence of the electrical signal and the resulting visual indication is often intended to indicate some other condition or state or to convey some message (e.g., servant "call" annunciators).
- (3) Note. Display of printed or painted objects that does not contain electrical communication is classified in Class 40 Card, Picture, or Sign Exhibiting.
- (4) Note. Mechanical, as distinguished from electrical, devices for giving signals of

the nature of either alarms or indicators are classified in Class 116, Signals and Indicators.

- (5) Note. Radiant energy actuated visual indicators, (i.e., all methods and apparatus for using, generating, controlling, or detecting radiant energy) that do not contain electrical communications are found in Class 250, Radiant Energy.
- (6) Note. An optical element or an optical element system that includes a liquid crystal display is classified in Class 349, Liquid Crystal Cells, Elements and Systems, appropriate subclasses for utilizing a liquid crystal device in general.
- (7) Note. A light source structure to cast light in at least one direction to render objects in that direction visible and/or the combination of a source of visible radiant energy and means to modify the distribution or composition of the radiant energy emanating from the source, or methods for utilizing said combination are found in Class 362, Illumination.
- (8) Note. Display systems having selective electrical control are classified in Class 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems.

**SEE OR SEARCH THIS CLASS, SUB-CLASS:**

- 286.01+, for a signalling system having a visual indicator.
- 435+, for visual indicators used with vehicles.
- 500+, for a condition responsive indicating system, particularly subclass 600 for condition responsive radiant energy used in electrical communication.
- 907+, for visual indicators used to control vehicle or pedestrian traffic.

**SEE OR SEARCH CLASS:**

- 40, Card, Picture, or Sign Exhibiting, appropriate subclasses for indicators void of electrical communications.
- 116, Signals and Indicators, subclass 200 for mechanical indicators.

- 219, Electric Heating, subclass 248 for a heating device combined with a sole plate-type pressure application means (e.g., a flatiron, etc.) including a condition-responsive indicator or subclass 720 where a control system for a microwave heating device has a display or alarm.
- 250, Radiant Energy, appropriate subclasses for radiant energy responsive signalling.
- 313, Electric Lamp and Discharge Devices, subclass 513 for character display with particular mask or electrode shape.
- 315, Electric Lamp and Discharge Devices: Systems, subclass 169.1 for a visual indicator used in the shifting of a register, counter, or display.
- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 1.1-3.4 for selective electrical control display systems.
- 349, Liquid Crystal Cells, Elements and Systems, appropriate subclasses for utilizing a liquid crystal device in general.
- 359, Optics: Systems (Including Communication) and Elements, subclasses 265+ for a nonselective electrochronic display element.
- 362, Illumination, appropriate subclasses for electric lights and associated apparatus used for illumination.
- 368, Horology: Time Measuring Systems or Devices, subclasses 223+ for displays or display devices details.
- 482, Exercise Devices, subclass 3 for pace setting indicator and subclass 84 for striking exercise devices having indicators.
- 902, Electronic Funds Transfer, subclass 21 for ATM (Automatic Teller Machine) with specific data output means or indicator.

**815.41 False signal prevention (anti-sunlight):**

This subclass is indented under subclass 815.4. Subject matter having means for preventing an improper indication.

**815.42 Having light piping:**

This subclass is indented under subclass 815.4. Subject matter including a light conducting material characterized by an extended longitudinal dimension along which it guides light from a light admitting end connected to a light source to a light emitting end configured to display the visually perceptible indication.

**SEE OR SEARCH CLASS:**

- 40, Card, Picture, or Sign Exhibiting, subclass 547 for fiber optic illuminated sign.
- 250, Radiant Energy, appropriate subclasses for light piping used in radiant energy.
- 362, Illumination, subclass 26 for edge illuminated modifier or light rod/pipe.
- 385, Optical Waveguides, appropriate subclasses for fiber optics, particularly subclasses 116+ for fiber optical imaging including shaping, enhancing, and correcting coherent fiber structure, per se.

**815.43 With specified colors:**

This subclass is indented under subclass 815.42. Subject matter having means for selecting the displayed colors of the visually perceptible indication.

- (1) Note. Means for selecting the displayed colors comprises, for example, color filter, color wheel, or a plurality of light sources.

**SEE OR SEARCH CLASS:**

- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 600 through 605 for selectable color attributes display systems having selective electrical control.

**815.44 Seven-segment indicator:**

This subclass is indented under subclass 815.4. Subject matter in which the visually perceptible indication consists of segments of a seven-segment character.

**SEE OR SEARCH CLASS:**

- 40, Card, Picture, or Sign Exhibiting, subclass 450 for bar segment (e.g., figure eight).
- 313, Electric Lamp and Discharge Devices, subclass 510 for luminescent solid or liquid material with character display (e.g., digits or letters) and subclass 581 for three or more electrode discharge devices.
- 315, Electric Lamp and Discharge Devices: Systems, subclasses 129+ for signal, indicator, or alarm.
- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclass 34 for seven-segment display in selective display systems.

**815.45 Using light emitting diodes:**

This subclass is indented under subclass 815.4. Subject matter in which the signal indicating device is a light emitting semiconductor device.

**SEE OR SEARCH CLASS:**

- 250, Radiant Energy, subclass 214 for light amplifiers and subclasses 552+ for solid state light source, including matrices and array, per se.
- 257, Active Solid-State Devices (e.g., Transistors, Solid-State Diodes), subclass 13, 79 through 103, and 918 for incoherent light emitting injection luminescent devices.
- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclass 39, 47, and 82+ for light emitting diode display in selective display systems.

**815.46 Audio responsive lamp:**

This subclass is indented under subclass 815.4. Subject matter comprising an electric light controlled or powered by electrical signals representative of sound waves.

**SEE OR SEARCH CLASS:**

- 367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 197+ for acoustic responsive selective system in general.

**815.47 Switchboard or panel type (e.g., bullseye):**

This subclass is indented under subclass 815.4. Subject matter comprising electric light means associated with a plurality of circuit breakers to indicate the status (opened or closed) of the circuit breakers.

**SEE OR SEARCH CLASS:**

379, Telephonic Communications, subclasses 308+ for switching apparatus, per se.

**815.48 Pushbutton:**

This subclass is indented under subclass 815.47. Subject matter in which a manual actuator must be depressed to operate the circuit breakers.

**815.49 Housing:**

This subclass is indented under subclass 815.47. Subject matter wherein the indicating means is enclosed in a protective covering.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

815.73, for lamp enclosed in transparent housing.

**815.5 Including optical means:**

This subclass is indented under subclass 815.49. Subject matter comprising a lens covering part of the signal indicating device for affecting the light emitted therefrom.

**815.51 Including spring:**

This subclass is indented under subclass 815.49. Subject matter comprising a resilient member.

- (1) Note. This subclass includes, for example, a resilient member for controlling the energization of the indicating means, or for holding, supporting, or retaining the indicating means in its position.

**815.52 With details of energizing circuit:**

This subclass is indented under subclass 815.47. Subject matter comprising at least an electrical component for controlling the energization of the indicating device.

- (1) Note. The component includes, for example, a resistor, transistor, contact, or circuit breaker.

**815.53 Lighted alphanumeric or character indicator matrix:**

This subclass is indented under subclass 815.4. Subject matter comprising means for illuminating or emitting light to form alphanumeric or character indicative elements arranged in rows and/or columns.

- (1) Note. Means for illuminating includes, for example, an ambient and/or an artificial light source.

**SEE OR SEARCH CLASS:**

- 40, Card, Picture, or Sign Exhibiting, subclasses 447+ for alphanumeric devices and subclasses 541+ for illuminated sign.
- 313, Electric Lamp and Discharge Devices, subclass 510 for luminescent solid or liquid material with character display (e.g., digits or letter).
- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 25+ for cathode-ray tube with alphanumeric display and subclasses 467-472.3 for character display in a generic selective display system.
- 362, Illumination, subclasses 23+ for illuminated scale or dial.

**815.54 Having optical means in viewing path:**

This subclass is indented under subclass 815.53. Subject matter having a light modifying means between the light source and the matrix for affecting the presentation of the indicative elements.

- (1) Note. The optical means includes, for example, a lens, mask, grating, mirror, light guides, etc.

**SEE OR SEARCH CLASS:**

- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclass 32 for optical means interposed in viewing path (e.g., filters, lens) in a generic selective display system.

- 359, Optics: Systems (Including Communication) and Elements, subclasses 602+ for glare or unwanted light reduction with mirror, subclasses 515+ for signal reflector, and subclasses 642+ for lens, per se.

**815.55 Transparent or translucent indicator with means for blocking light:**

This subclass is indented under subclass 815.4. Subject matter wherein the perceptible indication is formed by a light source, a transparent or a translucent panel, and a screen or mask to permit selected parts of the light to pass there-through.

SEE OR SEARCH CLASS:

- 40, Card, Picture, or Sign Exhibiting, subclasses 541+ for illuminated sign.
- 359, Optics: Systems (Including Communication) and Elements, subclass 608 for translucent or semi-transmitting panel positioned in front of an adjustable anti-glare mirror.

**815.56 Color:**

This subclass is indented under subclass 815.55. Subject matter including means to display the perceptible indication in selected color.

**815.57 Having optical device:**

This subclass is indented under subclass 815.55. Subject matter comprising a lens or a lens system for directing the rays of light from the light source to affect the formation of the perceptible indication.

SEE OR SEARCH CLASS:

- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclass 32 for optical means interposed in viewing path (e.g., filters, lens) in a generic selective display system.
- 359, Optics: Systems (Including Communication) and Elements, subclasses 515+ for signal reflector and subclasses 642+ for lens.

**815.58 Step by step positioner:**

This subclass is indented under subclass 815.4. Subject matter comprising pawl means engaging a toothed member for intermittently mov-

ing it by a distance of one or a series of teeth at a time to present the visually perceptible indication.

SEE OR SEARCH CLASS:

- 235, Registers, subclass 144 for pawl and notch.
- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 108+ for plural mechanically movable display elements with selective electrical control in selective display systems.

**815.59 Having resetting device:**

This subclass is indented under subclass 815.58. Subject matter comprising means for restoring the positioner or the visually perceptible indication to normal position.

**815.6 Remote controller:**

This subclass is indented under subclass 815.58. Subject matter wherein the operation of a distant step by step positioner is controlled over a wire or wireless communication channel by circuitry at a transmitting station.

**815.61 Drum indicator:**

This subclass is indented under subclass 815.58. Subject matter wherein the intermittently moved toothed member causes a rotation of a cylindrical mechanical element bearing alphanumeric or character indicative elements on its periphery thereby presenting the visually perceptible indication.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 815.64, for indicator wheel operated by electromagnetic rotator.

**815.62 Electromagnetic actuator for indicator matrix:**

This subclass is indented under subclass 815.4. Subject matter comprising an electromagnet capable of producing a force to change the positions of indicative elements arranged in an array thereby presenting the perceptible indication.

**815.63 Binary indicator:**

This subclass is indented under subclass 815.4. Subject matter in which the signal indicating device moves between first and second limit positions to indicate either one of two predetermined states in an operational system.

- (1) Note. The two predetermined states may be, for example, set and reset, on and off, normal or fault, etc.

**815.64 Electromagnetic rotator for indicator wheel:**

This subclass is indented under subclass 815.4. Subject matter comprising an electromagnet capable of producing a force to rotate a wheel having indicative elements arranged on its face or around its periphery thereby presenting the perceptible indication.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

815.61, for drum indicator that rotates intermittently by a distance of one or a series of teeth at a time.

**815.65 Multiple colors:**

This subclass is indented under subclass 815.4. Subject matter which produces the visually perceptible indication in at least two different colors.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 600-605 for selectable color attributes display systems having selective electrical control.

**815.66 By light signal:**

This subclass is indented under subclass 815.65. Subject matter in which the indication is produced by light rays emitted from a light source.

SEE OR SEARCH CLASS:

40, Card, Picture, or Sign Exhibiting, subclass 581 for a colored light illuminated sign and subclass 444 for selective or intermittent illumination with colored light.

**815.67 Plural:**

This subclass is indented under subclass 815.66. Subject matter having a plurality of light sources.

**815.68 With movable optical means:**

This subclass is indented under subclass 815.66. Subject matter comprising means for selectively moving a light modifier located between the light source and the indication to produce different colors.

- (1) Note. The optical means comprises, for example, a color filter, lens, colored shutter, or screen.

**815.69 Diverse indications:**

This subclass is indented under subclass 815.4. Subject matter for giving different types of indications.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclasses 2+ for nonelectrical combined function and subclass 280 for nonelectrical diverse indicators.

**815.7 Having percussion type indication (e.g., electric bells, chimes):**

This subclass is indented under subclass 815.69. Subject matter in which one of the indications is an audible sound produced by means having a striking mechanism.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

392.1, for percussion type sound producer (e.g., signal chimes or bells).

SEE OR SEARCH CLASS:

84, Music, subclass 404 for rigid vibrating instrument with striker and subclass 407 for bells with electric action.  
379, Telephonic Communications, subclass 376 for signal reception at substation with visual indication of incoming call.

**815.71 Electromagnetic:**

This subclass is indented under subclass 815.7. Subject matter comprising an electromagnet for operating the striking mechanism.

**815.72 Having pneumatic type indication:**

This subclass is indented under subclass 815.69. Subject matter in which one of the indications is an audible sound produced by the flow of air or other gaseous substances.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

404.1, for pneumatic type sound producer (e.g., whistle or siren).

**815.73 With lamp enclosed in transparent housing:**

This subclass is indented under subclass 815.4. Subject matter having an electric lamp or discharge device inside a light transmissive enclosure.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

815.49, for housing of switch board or panel type indicator.

SEE OR SEARCH CLASS:

362, Illumination, subclass 362 for lamp enclosed in housing.

**815.74 Combined:**

This subclass is indented under subclass 815.73. Subject matter combined with diverse art subject matter.

**815.75 Light source modifier:**

This subclass is indented under subclass 815.73. Subject matter having means to control the duration or intensity or direction of the light emanating from the lamp.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 589 through 605 for intensity control in generic selective electrical display systems.

**815.76 Lens type:**

This subclass is indented under subclass 815.75. Subject matter in which the transmissive enclosure comprising an optical device for focussing, converging, or diverging the light emitted from the lamp or the discharge device to obtain a desired light emitting characteristic.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

22+, for signal lens used as traffic lenses or vehicle indication.

SEE OR SEARCH CLASS:

359, Optics: Systems (Including Communication) and Elements, subclasses 642+ for lenses, per se.

**815.77 Relatively movable light source:**

This subclass is indented under subclass 815.73. Subject matter having means for moving the lamp within the enclosure.

**815.78 Pointer indicator:**

This subclass is indented under subclass 815.4. Subject matter comprising a movable needle positioned to indicate the visually perceptible indication.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

815.86, for rotary indicator.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclasses 284+ for nonelectrical rotary indicator having pointers.

**815.79 Annunciator:**

This subclass is indented under subclass 815.78. Subject matter wherein the needle is raised or dropped from an inoperative position to an operative position to indicate the visually perceptible indication.

**815.8 Having electromagnetically releasable latch:**

This subclass is indented under subclass 815.79. Subject matter in which the needle is released for movement by the operation of an electromagnetically releasable latch.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

815.9, for indicator having electromagnetically releasable latch.

**815.81 Grouped drop annunciators:**

This subclass is indented under subclass 815.4. Subject matter having a multi unit indicator comprising a device operable to move a plurality of visually perceptible members (i.e., tar-

gets) individually or simultaneously from a nonsignalling position to a signalling position.

**815.82 Support:**

This subclass is indented under subclass 815.81. Subject matter comprising a framework for mounting the drops or targets.

**815.83 Movable:**

This subclass is indented under subclass 815.4. Subject matter wherein the indicating device (i.e., target) signals by a change of position.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 108+ for plural mechanically movable display elements with selective electrical control in selective display systems.

**815.84 Semaphore:**

This subclass is indented under subclass 815.83. Subject matter wherein the signalling indicating device comprises one or more movable arms positioned to produce the visually perceptible indication.

SEE OR SEARCH THIS CLASS, SUBCLASS:

127, for semaphore used in traffic and vehicle signalling.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclass 319 for an arm that is a rotary indicator.

**815.85 Self restoring type annunciator:**

This subclass is indented under subclass 815.83. Subject matter comprising a target raised into an operative position by an energized electromagnet and dropped back to an inoperative position by gravitational force.

**815.86 Rotary:**

This subclass is indented under subclass 815.83. Subject matter wherein the visual indicator moves with a rotary motion.

SEE OR SEARCH THIS CLASS, SUBCLASS:

815.58, for step by step positioner.

815.63, for indicator that rotates between two positions to indicate either one of two predetermined operational states.

815.64, for indicator wheel operated by an electromagnetic rotator.

815.78, for pointer indicator.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclass 284 for nonelectrical rotary indicator with actuating means.

345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 649 through 659 for rotation of images on a generic selective display system.

**815.87 Rotor driven:**

This subclass is indented under subclass 815.86. Subject matter in which the rotary motion is generated by an electromagnetic rotor mounted on a shaft.

**815.88 Vane indicator:**

This subclass is indented under subclass 815.86. Subject matter comprising a hinged indicator swinging between positions to produce the visually perceptible indication.

**815.89 Circuit closing type:**

This subclass is indented under subclass 815.83. Subject matter having means to close a switching or a contacting device of a normally open circuit when the signalling device moves.

**815.9 By electromagnetically releasable latch:**

This subclass is indented under subclass 815.83. Subject matter wherein the target is released for movement by the operation of an electromagnetically releasable latch.

SEE OR SEARCH THIS CLASS, SUBCLASS:

815.8, for pointer annunciator having an electromagnetically releasable latch.

**815.91 Having restoring means:**

This subclass is indented under subclass 815.9. Subject matter comprising means for resetting the released target to a normal position.



**815.92 Gravity operated drop annunciator:**

This subclass is indented under subclass 815.9. Subject matter in which the target is moved into an annunciation or a set position by gravitational force.

**825 SELECTIVE:**

This subclass is indented under the class definition. Subject matter for controlling one or more devices to obtain a plurality of results by transmission of a designated one of plural distinctive control signals over a smaller number of communication lines or channels than the total number of possible distinct results.

- (1) Note. As used hereinafter, the term transmitter refers to the source of signals, and the term receiver refers to circuitry responsive to such signals.
- (2) Note. This subject matter differs from simple switching in providing more than one result per channel in accordance with the signal content, as, for example, addressing one of a plurality of devices over a single channel.
- (3) Note. Systems containing receivers, receivers and receiver subsystems, are classified in this and indented subclasses.
- (4) Note. Transmission of signals providing for messages of arbitrary content is not classified herein.
- (5) Note. Combinations with a specific art end element are usually classified therewith.

SEE OR SEARCH THIS CLASS, SUBCLASS:

286.01+, for manually actuated alarm systems.  
 438+, for alarms or indicators associated with the selective control devices of a vehicle, especially subclass 456 for transmission gear selectors, subclasses 457+ for "reminder" indicators of various selectable functions, and subclasses 475+ for turn signals.  
 500+, for condition responsive indication.  
 517+, for selective indication of one of a plurality of sensed conditions.

853.3+, for selective control in a wellbore communications system.

870.01+, for telemetry which may be combined with or have selectivity.

SEE OR SEARCH CLASS:

- 29, Metal Working, appropriate subclasses for miscellaneous manufacturing processes.
- 60, Power Plants, subclasses 700 through 710 and 719 for control of power plants.
- 82, Turning, subclass 48 for triggered severing or cutoff control.
- 114, Ships, subclasses 365+ for life craft handling.
- 118, Coating Apparatus, subclass 695 and 696 for selective control of coating apparatus.
- 177, Weighing Scales, subclass 14 for selectively preset cycle flow terminators.
- 178, Telegraphy, subclasses 33+ for telegraph selectors.
- 180, Motor Vehicles, subclasses 6.2+, 167+, and 204 for selective control of motor vehicles.
- 200, Electricity: Circuit Makers and Breakers, subclasses 1+ for multiple circuit control.
- 219, Electric Heating, subclass 714 for a remote control system for a microwave heating device.
- 222, Dispensing, subclass 639 for electrical control of dispensing.
- 234, Selective Cutting (e.g., Punching), appropriate subclasses.
- 235, Registers, subclasses 375+ for selective control by means of data-bearing records.
- 244, Aeronautics, subclasses 3.1+ for missile trajectory control; and subclasses 175+ for electric aircraft control.
- 246, Railway Switches and Signals, appropriate subclasses for selective systems in railway signalling.
- 273, Amusement Devices, subclasses 237+ for electrical board games.
- 290, Prime-Mover Dynamo Plants, subclasses 7+ for electric control of prime-mover dynamo plants.
- 307, Electrical Transmission or Interconnection Systems, subclass 29, 37, and 38+ for control of individual loads in

- an electric power distribution system; subclass 115 for a power-switching system having selective actuation; and subclasses 401+ for magnetic reactor systems.
- 318, Electricity: Motive Power Systems, subclasses 34+ for diverse plural controlled electric motors.
- 322, Electricity: Single Generator Systems, appropriate subclasses for control of electrical generating systems.
- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 518+ for miscellaneous control circuits and subclasses 365+ for miscellaneous gating circuits.
- 334, Tuners, subclasses 8+ for remotely controlled tuners.
- 335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 107+ and 138+ for a selectively controlled switch.
- 337, Electricity: Electrothermally or Thermally Actuated Switches, subclass 10 and 44 for a selectively controlled switch.
- 341, Coded Data Generation or Conversion, subclasses 173 through 192 for coded generator or transmitter.
- 342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), appropriate subclass for selective communications in the directive radio wave systems.
- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 1.1 through 3.4 for plural display communications systems.
- 359, Optics: Systems (Including Communication) and Elements, subclasses 142+ for optical remote control.
- 361, Electricity: Electrical Systems and Devices, subclasses 139+ and 211 for selective control relays; and subclass 160 for relay control systems.
- 365, Static Information Storage and Retrieval, appropriate subclasses for static memory devices which may be selectively operated, or which may be in the form of a matrix.
- 367, Communication, Electrical: Acoustic Wave Systems and Devices, appropriate subclasses for selective systems having an acoustic communications link.
- 369, Dynamic Information Storage or Retrieval, subclasses 24.01 through 42.01 for selective remote control; especially subclasses 30.01-41.01 for selective addressing of storage medium or portion thereof (e.g., programmed access, "jukebox").
- 370, Multiplex Communications, appropriate subclasses for multiplex communications in general.
- 375, Pulse or Digital Communications, appropriate subclasses for pulse communications in general.
- 377, Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, appropriate subclasses for electrically operated registers which may have selective operation.
- 455, Telecommunications, appropriate subclasses for analog communications in general.
- 477, Interrelated Power Delivery Controls, Including Engine Control, for interrelated control between a motor and a transmission, clutch, or brake.
- 700, Data Processing: Generic Control Systems or Specific Applications, subclasses 11 through 27 for a data processing sequential or selective generic control system, apparatus, or process.
- 704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 200+ for special signal processing.
- 709, Electrical Computers and Digital Processing Systems: Multiple Computer or Process Coordinating, subclasses 200 through 253 for data transferring among multiple computer systems.
- 710, Electrical Computers and Digital Data Processing Systems: Input/Output, subclasses 1+ for transferring data from one or more peripherals to one or more computers for the latter to process, store, or further transfer or for transferring data from the computers to the peripherals (i.e., input/output).

put processing); subclass 100 for system intraconnecting for access regulating and arbitration within a digital data processing system; subclasses 107+ for bus access regulating; subclasses 200 through 244 for generalized locking, polling, access arbitrating; and subclasses 260 through 269 for interrupt processing.

711, Electrical Computers and Digital Processing Systems: Memory, subclasses 200+ for generalized address forming.

#### **825.01 Spare channel:**

This subclass is indented under subclass 825. Subject matter having one or more communication channels additional to those in normal use, which additional channels are used solely in the event of a fault in, or failure of, a normally used communication channel.

#### **SEE OR SEARCH CLASS:**

714, Error Detection/Correction and Fault Detection/Recovery, subclasses 3+ for replacement with a spare in response to a fault, and subclass 821 for plural parallel communication channels.

#### **825.02 Tree or cascade:**

This subclass is indented under subclass 825. Subject matter having alternatively operable circuitry branches which are selectively operable, each of said branches further exercising selective control upon succeeding circuitry, and there being no connection between the separate branch circuits.

#### **825.19 Communication or control for the handicapped:**

This subclass is indented under subclass 825. Subject matter which performs a function normally performed directly by an individual and particularly adapted for control by physically impaired individual.

#### **SEE OR SEARCH CLASS:**

704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 258+ for a speech synthesizer using sequential sounds.

#### **825.2 Synchronizing:**

This subclass is indented under subclass 825. Subject matter including a reference timing function with respect to which different control functions are performed.

#### **825.21 With addressing:**

This subclass is indented under subclass 825.2. Subject matter having plural controlled devices, each one of which is actuated by a signal having a unique characteristic corresponding to the respective one of the controlled devices.

- (1) Note. The term “unique characteristics” refers to a parameter, the content, or the relative time of occurrence of the signal.

#### **825.22 Program control:**

This subclass is indented under subclass 825. Subject matter producing each of a plurality of different results in a time sequential manner.

- (1) Note. The term “time sequential manner” is intended to denote control of the order in which the different results are performed.

#### **825.23 Machine tool:**

This subclass is indented under subclass 825.22. Subject matter for control of a work-contacting element which causes a physical alteration in the work (e.g., chipping, boring).

#### **SEE OR SEARCH THIS CLASS, SUB-CLASS:**

825, for search notes to machine tools.

#### **825.24 Of audio systems:**

This subclass is indented under subclass 825.22. Subject matter in which the results are intended to control various aspects of an audible signal producing system.

- (1) Note. Included herein are selection of distinct audio messages.

#### **SEE OR SEARCH THIS CLASS, SUB-CLASS:**

825.25, for nonprogram audio system control.

**825.25 Audio system (e.g., by pulse signal):**

This subclass is indented under subclass 825. Subject matter wherein the controlled device is a nominally recited, audible signal reproducing system.

- (1) Note. A selectively controlled audio system with details thereof is classified with such an audio system.

SEE OR SEARCH THIS CLASS, SUBCLASS:

825.24, for such subject matter with program control thereof.

SEE OR SEARCH CLASS:

- 360, Dynamic Magnetic Information Storage or Retrieval, subclasses 77.01+ for selection of a track on a magnetic record carrier.
- 369, Dynamic Information Storage or Retrieval, subclasses 30.27 through 30.37 and subclass 33.01 for selective control circuitry in optical storage medium and in phonographs, respectively.
- 455, Telecommunications, subclasses 31.1+, 88, 92, 151.1, or 352+, as appropriate, for remote control of a modulated wave communication system or subsystem.

**825.26 Stock quotation:**

This subclass is indented under subclass 825. Subject matter wherein the controlled device is particularly designed for display of stock prices and is geos:graphically separated from the information source of such prices.

- (1) Note. The device may include control circuitry for inquiring about a designated stock.

**825.27 With information storage:**

This subclass is indented under subclass 825.26. Subject matter having an arrangement to store the stock price information.

- (1) Note. Detailed structure of the storage arrangement is classified in an appropriate information storage class.

**825.28 Space allocation (e.g., vehicle seat, hotel reservation):**

This subclass is indented under subclass 825. Subject matter including a display for indicating the availability of spaces which may be reserved, and a control for modifying such availability by making or cancelling reservations for the spaces.

SEE OR SEARCH CLASS:

705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclass 5 for subject matter combined with a data processing feature.

**825.29 Remote terminal:**

This subclass is indented under subclass 825.28. Subject matter having an information storage device in which the space availability is stored at a geographically spaced location from the display and control.

**825.36 Having indication or alarm (e.g., location indication):**

This subclass is indented under subclass 825. Subject matter controlling an element which provides a humanly perceptible indication of the selective system operation or of an operator initiated condition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 3.7, 3.71, for selective monitoring and control including an indicator.
- 500+, for similar subject matter responsive to an external condition.
- 825.32, for similar subject matter indicating improper access.

**825.37 Additional to other selective control:**

This subclass is indented under subclass 825.36. Subject matter wherein another control function is performed in addition to the alarm or indication.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 7.1, for paging to control diverse device.
- 7.2 through 7.63, for a selective paging system.

825.32, when the other control function is an access control function operated alternatively to the indication.

**825.38 Party line:**

This subclass is indented under subclass 825.36. Subject matter intended for a telephone or telegraph system, where an indicator at a particular telephone or telegraph instrument is selectively actuated.

- (1) Note. Subject matter including handling of an information signal is classified in Class 178, as appropriate.

**825.39 Selection by means of frequency:**

This subclass is indented under subclass 825.38. Subject matter where the indicator is actuated by means of a cyclic current of a frequency peculiar to the selected indicator.

**825.4 Selector or indicator, per se:**

This subclass is indented under subclass 825.38. Subject matter limited, in extent, to the station selector or indicating mechanism for a party line system.

**825.41 Step by step impulse:**

This subclass is indented under subclass 825.38. Subject matter where the selected indicator is actuated in accordance with the number of transmitted impulse.

**825.42 Polarity controlled:**

This subclass is indented under subclass 825.41. Subject matter where selection is based on whether the pulses are of positive or negative amplitude with respect to ground.

**825.43 Amplitude or polarity controlled:**

This subclass is indented under subclass 825.38. Subject matter where the indicator is selected by means of the amplitude or polarity of a current.

**825.49 Location indication:**

This subclass is indented under subclass 825.36. Subject matter which produces a signal indicative of the location of a signal transmitting or receiving station.

**825.5 Lockout or priority (programmed or variable):**

This subclass is indented under subclass 825. Subject matter having an arrangement to permit transmission from only one of plural transmitters from which a control signal may originate.

- (1) Note. The permitted transmission may be from the first actuated transmitter, or from a transmitter given priority in accordance with a program, a condition, or time.

**SEE OR SEARCH CLASS:**

370, Multiplex Communications, subclasses 431+ which may include an assignment of communication channel by priority.

710, Electrical Computers and Digital Data Processing Systems: Input/Output, subclasses 113+ for centralized bus prioritizing, subclasses 119+ for decentralized bus prioritizing, subclass 200 for generalized access locking, and subclass 220 for generalized access polling in a digital data processing system.

**825.51 Designated priority:**

This subclass is indented under subclass 825.5. Subject matter wherein the transmitter permitted to transmit is determined by a preset priority.

**825.52 Addressing:**

This subclass is indented under subclass 825. Subject matter having plural controlled devices at distinct locations, each one of the devices being controlled by one or more unique signals whereby the individual devices may be controlled over a common communication channel.

- (1) Note. This subclass includes control of groups of devices by a group control signal.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

3.5 through 3.55, for addressing in a monitoring and control (e.g., supervisory) system.

7.45 through 7.49, for addressing format of a paging device  
825.21, for synchronizing with addressing.

**SEE OR SEARCH CLASS:**

711, Electrical Computers and Digital Processing Systems: Memory, subclasses 1+ for addressing combined with specific memory configurations (e.g., extended, expanded, dynamic, etc.), subclasses 100+ for generalized storage accessing and control in a digital data processing system, and subclasses 200+ for generalized address forming.

**825.53 Plural part (e.g., digit) or repetitions:**

This subclass is indented under subclass 825.52. Subject matter wherein the unique actuating signal either (a) has plural successively transmitted components, or (b) is repetitively transmitted for comparison of the repeated transmissions.

**825.56 With multidigit encoder:**

This subclass is indented under subclass 825. Subject matter including an encoder to produce a control signal which includes plural signals, each corresponding to a digit.

(1) Note. Examples are encoders producing plural dial pulses or tone code signals.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

825.53, for similar subject matter for addressing one of plural-controlled devices.  
825.62+, for control by a digital signal, in general.

**SEE OR SEARCH CLASS:**

341, Coded Data Generation or Conversion, subclasses 20+ for a keyboard controlled code transmitter.

**825.57 Pulse responsive actuation:**

This subclass is indented under subclass 825. Subject matter wherein the control signal is an abrupt variation in a voltage or current.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

825.56, for such subject matter including a plurality of pulse sequences.

**825.58 Phase or frequency shift keying:**

This subclass is indented under subclass 825.57. Subject matter wherein the control signal variation is a shift in the instantaneous frequency thereof.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

825.71+, for control by a signal frequency variation, in general.

**SEE OR SEARCH CLASS:**

375, Pulse or Digital Communications, subclasses 272+ for frequency shift keying in communication systems for messages of arbitrary content.

**825.59 Polarity:**

This subclass is indented under subclass 825.57. Subject matter wherein the variation is either one of plural potentials separated by a reference potential, or a change in direction of current flow.

**825.6 Pulse pairs:**

This subclass is indented under subclass 825.57. Subject matter wherein the signal is transmitted by pairs of pulses, a composite or differential parameter of which performs the control function.

(1) Note. The term "composite or differential parameter" denotes a parameter involving both pulses; e.g., time or amplitude difference.

**825.61 Having delay line:**

This subclass is indented under subclass 825.57. Subject matter including an element which retards the progress of a pulse.

**825.62 Serial:**

This subclass is indented under subclass 825.57. Subject matter wherein the control signal includes a group of consecutive or successive distinct pulses.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

825.53, for similar subject matter for addressing one of plural-controlled devices.  
825.56, for similar subject matter combined with a multidigit encoder.

**825.63 Pulse width:**

This subclass is indented under subclass 825.62. Subject matter wherein the control is performed in accordance with the duration of the pulse.

**825.64 Pulse spacing (e.g., pulse repetition rate):**

This subclass is indented under subclass 825.62. Subject matter wherein the control is performed in accordance with the interval between pulses.

**825.65 Counting:**

This subclass is indented under subclass 825.62. Subject matter wherein the control is performed in accordance with the number of pulses in the group.

**825.66 Relay:**

This subclass is indented under subclass 825.65. Subject matter where a series of relays are used to count the number of pulses in a group.

**825.67 Counting chain:**

This subclass is indented under subclass 825.65. Subject matter having plural successively connected counting stages.

**825.68 Shift register:**

This subclass is indented under subclass 825.62. Subject matter having a storage register with a series of stages in which the stored information may be shifted by pulses.

**825.69 Radio link:**

This subclass is indented under subclass 825.62. Subject matter in which the communication line includes transmission and reception of an electromagnetic wave.

SEE OR SEARCH CLASS:

341, Coded Data Generation or Conversion, subclass 176 for a remote control radio transmitter.

**825.7 Phase responsive actuation:**

This subclass is indented under subclass 825. Subject matter wherein the control signal includes a phase variation in an alternating current.

**825.71 Frequency responsive actuation:**

This subclass is indented under subclass 825. Subject matter wherein the control signal is a frequency variation in an alternating current.

**825.72 Wireless link:**

This subclass is indented under subclass 825.71. Subject matter wherein the communication line includes transmission and receipt of a radio wave or near field.

(1) Note. The term "near field" refers to capacitive or inductive coupling, rather than an electromagnetic wave. For a detailed definition, see Class 455, subclass 41.

**825.73 Plural frequencies:**

This subclass is indented under subclass 825.71. Subject matter transmitting plural control signals, each having a different frequency.

**825.74 Simultaneous:**

This subclass is indented under subclass 825.73. Subject matter wherein several of the control signals are transmitted at the same time.

**825.75 Permutation:**

This subclass is indented under subclass 825.73. Subject matter wherein control is performed in accordance with the sequence of control signal frequencies transmitted.

**825.76 Corresponding to distinct functions:**

This subclass is indented under subclass 825.73. Subject matter wherein each of the different control signal frequencies causes a different operation of the controlled device.

**825.77 Amplitude responsive actuation:**

This subclass is indented under subclass 825. Subject matter wherein the control signal includes an amplitude variation in an electric current.

**825.78 Divided resistor:**

This subclass is indented under subclass 825.77. Subject matter including a connection between plural resistance elements connected across a potential source.

- (1) Note. The plural resistance elements may be portions of a variable resistor.

**825.97 Having electron beam device:**

This subclass is indented under subclass 825. Subject matter including an element within which a narrow stream of electrons is moved in the same direction by an electric or magnetic field.

- (1) Note. The electron beam is generally used as an electric current connection.

**825.98 System having rectifier:**

This subclass is indented under subclass 825. Subject matter including an asymmetrically conducting element.

**850 UNDERWATER:**

This subclass is indented under the class definition. Subject matter in which a significant portion of the communication takes place under water.

SEE OR SEARCH THIS CLASS, SUBCLASS:

230, for electric signalling systems in which the signal is transmitted along a fluid conduit but not through the fluid therein.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclass 27 for this subject matter when nonelectrical.

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclass 131 for underwater electrical communication employing acoustic wave.

**851 Ship guidance system:**

This subclass is indented under subclass 850. Subject matter for providing navigational signals to a vehicle.

**852 Electrodes and electrode systems:**

This subclass is indented under subclass 850. Subject matter wherein the signal is communicated in the form of electric current passing to or from conductors immersed in water.

**853.1 WELLBORE TELEMETERING OR CONTROL (E.G., SUBSURFACE TOOL GUIDANCE, DATA TRANSFER, ETC.):**

This subclass is indented under the class definition. Subject matter wherein an information or control signal is transmitted to or from equipment located in an opening into the earth, for a well or wellbore, over an information transmission link.

- (1) Note. One of either the downhole equipment or transmission link must be described as to electrically conduct or process an information or control signal so as to meet the class definition.

- (2) Note. The telemetering may be of either a pre-existing or a concurrently produced wellbore.

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.01+, for telemetering equipment other than in a subsurface device.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 152.01+ for borehole or drilling testing, per se, not involving a purely electrical test or a purely magnetic test.

166, Wells, subclasses 250.01+ for well processes including signalling equipment; and subclass 66 for well apparatus including electrical signalling.

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 81+ for electrical wellbore telemetering systems in which the signal is transmitted in the form of an acoustic wave.

**853.2 Diagnostic monitoring or detecting operation of communications equipment or signal:**

This subclass is indented under subclass 853.1. Subject matter including a determination of the operation or other condition of the communication equipment or signal.

- (1) Note. The term "communication equipment" is intended to exclude determination of ambient or diverse equipment



condition monitoring, which are classified in the subclasses below, or in the appropriate diverse subject matter class.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

870.04, for calibration of a telemetry system not used in a wellbore.

**SEE OR SEARCH CLASS:**

73, Measuring and Testing, subclass 168 for a measurement or test of a pump or hydraulic equipment and subclasses 152.61+ for the testing of a pump in a borehole wherein the test is neither purely electrical nor purely magnetic.

714, Error Detection/Correction and Fault Detection/Recovery, subclasses 712+ for diagnostic testing of a transmission facility of general utility.

**853.3 Selective control of subsurface equipment:**

This subclass is indented under subclass 853.1. Subject matter having a communication link for controlling one or more devices in the underground equipment to obtain a plurality of results by transmission of a designated one of plural distinctive control signals over a smaller number of communication lines or channels than the total number of possible distinct results and which controls the underground equipment in accordance with the signal content.

- (1) Note. For further elaboration of selective communications, see the definition and notes of subclass 825 in this class.
- (2) Note. Recitation of a detail of diverse art underground equipment is classified with such equipment.
- (3) Note. Included in this and its indented subclasses are systems not limited to wellbore telemetering.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

825+, for selective control of remote equipment, other than a subsurface device.

**SEE OR SEARCH CLASS:**

- 175, Boring or Penetrating the Earth, subclasses 24+ automatic control of drilling by other than an electrical communications system. Automatic control of drilling by other than an electrical communications system.
- 439, Electrical Connectors, appropriate subclasses for electrical connector structure, of general utility.

**853.4 In horizontal or inclined drilling or passage:**

This subclass is indented under subclass 853.3. Subject matter wherein the opening in the earth is in other than a substantially vertical direction.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

856.1, for this subject matter absent selective control of subsurface equipment.

**853.5 Control of drilling apparatus using magnetic field:**

This subclass is indented under subclass 853.4. Subject matter having a drilling device and a magnetic field detector for control of the drilling device.

- (1) Note. The sensed magnetic field may be either the earth's magnetic field or an applied magnetic field.

**853.6 Control of drill bit or apparatus (e.g., steering, speed, etc.):**

This subclass is indented under subclass 853.3. Subject matter including a drilling equipment controlled by an electrical communications system.

**853.7 Repeater in subsurface link (e.g., cable, etc.):**

This subclass is indented under subclass 853.1. Subject matter having a device which receives and retransmits the signals at an intermediate position between the subsurface equipment and cooperating surface communications equipment, and which is separated from both the surface and subsurface equipment by a significant portion of the subsurface transmission link.

- (1) Note. The term "significant portion" excludes devices with a repeater or

amplifier on the surface or attached to the sonde housing.

- (2) Note. The retransmission is usually to strengthen or modify the signal being transmitted.
- (3) Note. Although systems including relays are in this subclass, the term relay is also used to designate a passive inductive or transformer device which is classified elsewhere.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

425.1+, for a repeater in an unspecified-type communications system.

SEE OR SEARCH CLASS:

370, Multiplex Communications, subclass 274, 279, 293, 315+, 492, and 501+ for a multiplex repeater of a specific type.

375, Pulse or Digital Communications, subclasses 211+ for a pulse or repeater in a digital communications device not limited to wellbore telemetering.

455, Telecommunications, subclasses 7+ for a modulated carrier signal repeater.

#### **853.8 With orientation sensing of subsurface telemetering equipment (other than drilling equipment):**

This subclass is indented under subclass 853.1. Subject matter combined with a determination of the angular direction of the subsurface communications equipment with respect to a vertical axis.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

853.4 and 856.1, for subsurface communications in a horizontal or inclined opening in the earth.

SEE OR SEARCH CLASS:

33, Geometrical Instruments, subclass 302 and 304+ for wellbore configuration determination.

- 175, Boring or Penetrating the Earth, subclass 40 for determination of inclination of a drilling tool position or direction.

#### **853.9 Including detail of subsurface signal storage (e.g., memory, recorder, register, etc.):**

This subclass is indented under subclass 853.1. Subject matter including a particularly described feature or arrangement of electrical storage of signal values for subsequent retrieval.

- (1) Note. Named or nominal inclusion of signal storage equipment is not considered particularly described as required for classification in this subclass; however, a particular arrangement of plural named storage devices is classified in this subclass.

- (2) Note. An arrangement for storing and subsequently combining sequential signals to form a composite signal for transmission is classified in this subclass.

SEE OR SEARCH CLASS:

360, Dynamic Magnetic Information Storage or Retrieval, appropriate subclasses for dynamic magnetic information storage not limited to wellbore telemetering.

365, Static Information Storage and Retrieval, appropriate subclasses for static information storage not limited to wellbore telemetering.

369, Dynamic Information Storage or Retrieval, appropriate subclasses for dynamic information storage not limited to wellbore telemetering.

#### **854.1 With position or depth recording (e.g., line payout, equipment locator, etc.):**

This subclass is indented under subclass 853.1. Subject matter wherein the depth or location in the wellbore of specified equipment in the wellbore is recorded or utilized to control a system operation.

- (1) Note. This subclass includes location of a sonde or other wellbore related equipment.

**854.2 Location of collar or stuck tool:**

This subclass is indented under subclass 854.1. Subject matter including equipment to ascertain the identity of a collar or the presence of a stuck tool.

**SEE OR SEARCH CLASS:**

- 33, Geometrical Instruments, subclass 302 and 304+ for wellbore configuration determination.
- 73, Measuring and Testing, subclass 152.56 for a process or an apparatus for determining a free point or a stuck point of a casing in a borehole, per se, not involving a purely electronic test or a purely electrical test.
- 235, Registers, subclasses 375+ for a system controlled by a data bearing coded record; and subclass 435, for a coded record sensor.

**854.3 Using a specific transmission medium (e.g., conductive fluid, annular spacing, etc.):**

This subclass is indented under subclass 853.1. Subject matter including a particularly described feature of the structure or composition of a material or medium through which the information or control signals are transmitted.

- (1) Note. The material is usually an electrical conductor.
- (2) Note. Named or nominal inclusion of a conductor is not considered particularly described as required for classification in this or its indented subclasses.

**SEE OR SEARCH CLASS:**

- 174, Electricity: Conductors and Insulators, subclasses 37+ for an underground conductor.

**854.4 Drill string or tubing support signal conduction:**

This subclass is indented under subclass 854.3. Subject matter wherein a casing, or sleeve, of a series of drill connectors is used to conduct the signal to or from the underground equipment.

**854.5 Wellbore casing or ground:**

This subclass is indented under subclass 854.3. Subject matter including conduction or passage of the signal through a well casing or the surrounding earth.

**854.6 Electromagnetic energy (e.g., radio frequency, etc.):**

This subclass is indented under subclass 853.1. Subject matter wherein the signal is transmitted in the form of a presence or variation in an electromagnetic field.

- (1) Note. The term electromagnetic field is intended to include an electrical or magnetic field, as well as electromagnetic radiation.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

870.01+, for a radio sonde telemetering system, of general utility.

**SEE OR SEARCH CLASS:**

- 367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 81+ for an electrical wellbore telemetering system in which the signal is transmitted in the form of an acoustic wave.

**854.7 Optical link (e.g. waveguide, etc.):**

This subclass is indented under subclass 854.6. Subject matter wherein the signal is transmitted over a communications link which includes an element which transmits electromagnetic energy having a frequency in or near the visible range.

- (1) Note. The term near is to indicate that a system with an element which optically modifies IR or UV radiation is included in this subclass.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

870.28+, for telemetering equipment having an optical link other than in a subsurface device.

## SEE OR SEARCH CLASS:

385, Optical Waveguides, appropriate subclasses for an optical energy conducting element.

**854.8 Near field coupling (e.g., inductive, capacitive, etc.):**

This subclass is indented under subclass 854.6. Subject matter wherein the electromagnetic energy has a variation other than the inverse square of distance.

- (1) Note. The term near field is intended to include nonradiative coupling such as by an inductive or capacitive field.

## SEE OR SEARCH CLASS:

379, Telephonic Communications, subclass 55.1 for a near field telephone device.  
381, Electrical Audio Signal Processing Systems and Devices, subclass 79 for a for a near field audio system.  
455, Telecommunications, subclass 41 for a modulated near field communication system.

**854.9 Cable or wire (e.g., conductor as support, etc.):**

This subclass is indented under subclass 854.3. Subject matter wherein an electrical information or control signal is transmitted over an electrical conductor forming an elongate element.

## SEE OR SEARCH CLASS:

174, Electricity: Conductors and Insulators, subclasses 37+ for an underground conductor, per se.

**855.1 Coupling connection structural feature:**

This subclass is indented under subclass 854.9. Subject matter including a detail of structure forming an electrical connection to a cable or wire or a section thereof.

## SEE OR SEARCH CLASS:

439, Electrical Connectors, subclass 624 for a seismic-type cable.

**855.2 Single conductor cable or wire:**

This subclass is indented under subclass 854.9. Subject matter wherein the signal conductor is composed of a single piece of solid material.

**855.3 Multiplexed signals:**

This subclass is indented under subclass 853.1. Subject matter wherein signals from different sources or to different receivers are transmitted over a single channel.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

870.12+, for frequency division multiplex telemetering equipment other than in a subsurface device.

870.13+, for time division multiplex telemetering equipment other than in a subsurface device.

## SEE OR SEARCH CLASS:

370, Multiplex Communications, appropriate subclasses for a multiplex communications device not limited to wellbore telemetering.

**855.4 Pulse or digital signal transmission:**

This subclass is indented under subclass 853.1. Subject matter wherein the information is transmitted in the form of an abrupt variation in an electrical signal or a pattern thereof.

**855.5 Digital signal processing in subsurface transmitter:**

This subclass is indented under subclass 855.4. Subject matter wherein the subsurface signal processing includes a particularly described feature of digital signal handling.

- (1) Note. Named or nominal inclusion of a digital device is not classified in this subclass.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

870.19+, for pulse signal telemetering equipment other than in a subsurface device.

## SEE OR SEARCH CLASS:

- 341, Coded Data Generation or Conversion, subclasses 173+ for a digital or pulse code generator of general utility.
- 375, Pulse or Digital Communications, subclasses 295+ for a pulse transmitter of general utility.

**855.6 Having acoustic sensor:**

This subclass is indented under subclass 855.5. Subject matter having a subsurface vibratory transducer connected to the digital signal processing apparatus or the electrical communications link.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 856.4, for this subject matter absent subsurface digital circuitry.

**855.7 Modification of signal bandwidth, frequency, or circuit impedance at subsurface location:**

This subclass is indented under subclass 853.1. Subject matter wherein the information to be transmitted is modulated on a signal and either the signal or circuit frequency characteristics are subsequently modified to optimize transmission between the surface and subsurface communications equipment.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 853.7, for a signal-modifying repeater in a wellbore cable or other subsurface link.

**855.8 Including specified power transmission feature or source (e.g., battery, etc.):**

This subclass is indented under subclass 853.1. Subject matter having a particularly described feature of circuitry providing electric power to the subsurface communications equipment.

- (1) Note. A named or nominal inclusion of a power transmission device is not classified in this or its indented subclasses.
- (2) Note. This subclass includes circuitry for separating an information carrying signal and an electrical power signal.

**855.9 Specified alternating current (A.C.) circuit feature:**

This subclass is indented under subclass 855.8. Subject matter wherein the feature providing for the energization of the subsurface station is described as having a feature varying as the frequency of an alternating current.

**856.1 In horizontal or inclined passage arrangement:**

This subclass is indented under subclass 853.1. Subject matter wherein the opening in the earth is in other than a substantially vertical direction.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 853.4, for this subject matter having selective control of subsurface equipment.

**856.2 With expandable or inflatable sensor element or mounting:**

This subclass is indented under subclass 853.1. Subject matter having an electrical sensor mounted on or including an element movable by expansion of an inflatable or mechanically movable device.

- (1) Note. Included herein are sensors which mechanically contact and electrically respond to the position of a wellbore interior.

**856.3 Including particular sensor:**

This subclass is indented under subclass 853.1. Subject matter having a particularly described feature of an underground condition-responsive sensor which provides information signals.

- (1) Note. A named or nominal inclusion of a sensor is not considered particularly described as required for classification in this or its indented subclasses.

## SEE OR SEARCH CLASS:

- 73, Measuring and Testing, subclasses 152.01+ for borehole or drilling testing, per se, not involving a purely electrical test or a purely magnetic test, and subclass 866.5 for a measuring probe, per se, not specifically provided for elsewhere.

**856.4 Acoustic or vibratory (e.g., sonic, fluidic, etc.):**

This subclass is indented under subclass 856.3. Subject matter in which the sensor includes an element a portion of which either generates or is responsive to mechanical vibration.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

855.6, for this subject matter combined with subsurface digital processing circuitry.

SEE OR SEARCH CLASS:

181, Acoustics, subclasses 101+ for acoustic geophysical or subsurface exploration not restricted to an electrical device.

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 81+ for an electrical wellbore telemetering system in which the signal is transmitted in the form of an acoustic wave.

**870.01 CONTINUOUSLY VARIABLE INDICATING (E.G., TELEMETERING):**

This subclass is indented under the class definition. Subject matter for giving an indication, at a receiving station, which is substantially continuous from a lower value to an upper value, said indication being under the control of a transmitter, said control being exercised over an electric circuit.

- (1) Note. The word "continuous", as used in the above definition, refers to the characteristic under which the value indicated is quantitative rather than qualitative; thus, for example, a system which nominally indicates a temperature in degrees is classified in this and indented subclasses, but a system which indicates temperature merely by designations such as "hot", "medium", and "cold" is not classified here, but in Class 340, subclass 584. Thus, the intelligence or variable indicated is basically an analog, human sensible value input.
- (2) Note. The quantity whose value is telemetered may be measured in a testing operation. This subclass, however, takes

only those telemetering systems not limited to testing or which are not provided for in the testing classes. See the subclasses referred to below under "SEARCH CLASS".

- (3) Note. This subclass includes, in addition to automatically responsive telemetering systems, those in which the quantity to be telemetered is determined by a manual operation; for example, the desired as well as the actual temperature of an auditorium may be telemetered from the auditorium to the heat control room.
- (4) Note. This is the generic subclass for electrical telemetry signaling means useful in transmitting a sensed quantity and not provided for in other classes.
- (5) Note. For the purposes of this subclass definition, a telemetry system provides the equipment necessary to sense such conditions as pressure and temperature and to transmit their electrical equivalents via a particular channel or means, but often via a radio link to another location for display and/or recording.
- (6) Note. Telemetry, also called telemetering or remote metering, is measurement which through intermediate means, can be interpreted at a distance from a primary detector. A receiving instrument converts the transmitted electrical signals into units of data which can then be translated by data reduction into appropriate units.
- (7) Note. Class 73 takes telemetric signaling means in combination with a particular measuring means of the type provided for in Class 73.
- (8) Note. Class 324 takes telemetric signaling means in combination with a particular measuring means of the type provided for in Class 324.
- (9) Note. Class 356 takes telemetric signaling means in combination with a particular measuring means of the type provided for in Class 356.

- (10) Note. Class 374 takes a telemetric signaling arrangement in combination with a structurally detailed measuring arrangement provided for by Class 374.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

853.1+, for nonacoustic wave wellbore telemetering.

SEE OR SEARCH CLASS:

- 33, Geometrical Instruments, subclass 267 for straightline light ray type with telemetric means; subclass 312 for indicator of direction of force-traversing material media with borehole direction or inclination using electrical telemetering to read-out; subclass 317 for gyromagnetic compass with electrical telemetering; and subclasses 363+ for magnetic field responsive with electrical telemetering.
- 73, Measuring and Testing, appropriate subclasses for systems limited to mechanical testing in combination with telemetering systems to indicate the result of the test.
- 128, Surgery, subclass 903 for radio telemetry; and subclass 904 for telephone telemetry.
- 177, Weighing Scales, Digest 10 for telemetric systems indicating weight.
- 324, Electricity: Measuring and Testing, appropriate subclasses for systems limited to electrical testing combined with telemetering systems to indicate the result of the test.
- 333, Wave Transmission Lines and Networks, subclasses 1+ for plural channel wave transmission lines and networks.
- 356, Optics: Measuring and Testing, appropriate subclasses for systems limited to optical testing combined with telemetering systems to indicate the result of the test.
- 367, Communications, Electrical Acoustic Wave Systems and Devices, subclass 76 for seismic prospecting land-reflection type, using telemetry; and subclasses 81+ for wellbore telemetry.

- 370, Multiplex Communications, appropriate subclasses for combining or distributing information via frequency or via time channels, for multiplexing systems not restricted to telemetry.
- 374, Thermal Measuring and Testing, appropriate subclasses for systems limited to a thermal test combined with telemetering systems to indicate the result of the test.
- 702, Data Processing: Measuring, Calibrating, or Testing, appropriate subclasses for data processing measuring, calibrating or testing which may include telemetry.
- 714, Error Detection/Correction and Fault Detection/Recovery, appropriate subclasses for Error Detection/Correction and Fault Detection/Recovery combined with telemetry.

#### 870.02 With meter reading:

This subclass is indented under subclass 870.01. Subject matter wherein telemetering means develops a composite signal representative of the indications of one or more meters and transmits the developed signal for reproduction at a remote point.

- (1) Note. Indicators, per se, are not classified herein.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

870.4, for particular indicators.

SEE OR SEARCH CLASS:

- 324, Electricity: Measuring and Testing, appropriate subclasses for systems limited to measurement of electrical values, regardless of telemetering system between meter and indication.

#### 870.03 Having plural transmitters:

This subclass is indented under subclass 870.02. Subject matter wherein the meter-reading means includes more than one sensing point or input to the telemetering system.

- (1) Note. A transmitter for the purpose of this definition is analogous to a transducer.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

870.06, for plural transmitters in combination with calculation.

870.11, for plural transmitter, per se.

**870.04 With calibration:**

This subclass is indented under subclass 870.01. Subject matter wherein the telemetering system has means to ascertain, by measurement or comparison with a standard, any variation of the indication from an expected value.

SEE OR SEARCH CLASS:

702, Data Processing: Measuring, Calibrating, or Testing, subclasses 85+ for data processing calibrating or correction system.

**870.05 With calculation:**

This subclass is indented under subclass 870.01. Subject matter combined with means for performing some mathematical operation.

- (1) Note. The system, for example, may be provided with means to furnish an indication on a logarithmic basis.

SEE OR SEARCH CLASS:

235, Registers, subclass 419 for record-controlled calculators which are mechanical or electrical.

708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 100+ for digital electrical calculators.

**870.06 Plural transmitters (e.g., ratio):**

This subclass is indented under subclass 870.05. Subject matter having plural sensing points or inputs to the telemetering system.

- (1) Note. The system, for example, may be provided with means to indicate the sum of a plurality of inputs or the ratio between the two inputs.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

870.03, for plural transmitters in combination with meter reading.

870.11, for plural transmitters not in combination with calculation.

**870.07 Combined (TM system with other system):**

This subclass is indented under subclass 870.01. Subject matter in which the telemetering system is combined with some other type of diverse system.

SEE OR SEARCH CLASS:

73, Measuring and Testing, appropriate subclasses for systems limited to mechanical testing in combination with telemetering systems to indicate the result of the test.

324, Electricity: Measuring and Testing, appropriate subclasses for systems limited to electrical testing combined with telemetering systems to indicate the result of the test.

356, Optics: Measuring and Testing, appropriate subclasses for systems limited to optical testing combined with telemetering systems to indicate the result of the test.

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 76+ for seismic prospecting land- reflection type, using telemetry; and subclasses 81+ for wellbore telemetry.

374, Thermal Measuring and Testing, appropriate subclasses for systems limited to a thermal test combined with telemetering systems to indicate the result of the test.

**870.08 Radio dial:**

This subclass is indented under subclass 870.07. Subject matter in which the telemetering system is responsive to the position of a radio operation indicator.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclasses 124.1+ for radio dial, per se.

334, Tuners, subclass 86 for radio dial combinations limited to tuning structure.

346, Recorders, subclass 37 for recorders for recording the position of radio dials.



**870.09 With alarm or annunciator (concurrent with TM):**

This subclass is indented under subclass 870.07. Subject matter in which the telemetering systems is combined with a binary indicator.

SEE OR SEARCH THIS CLASS, SUBCLASS:

500+, for condition-responsive systems.

**870.1 For radio sonde:**

This subclass is indented under subclass 870.01. Subject matter wherein the telemetering is used in a balloon-borne instrument for simultaneous measurement and transmission of meteorological data.

**870.11 Plural transmitters:**

This subclass is indented under subclass 870.01. Subject matter having plural sensing points or inputs.

- (1) Note. A transmitter for the purpose of this definition is analogous to a transducer.

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.03, where the plural transmitters are combined with meter reading.

870.06, where the final output of the telemetering systems provides an indication which is a mathematical representation of some input.

**870.12 Frequency division multiplex:**

This subclass is indented under subclass 870.11. Subject matter whereby the transmission of data involving two or more quantities on a common transmission medium is accomplished by modulation of carriers of different frequencies.

- (1) Note. Differing segments need not be associated on a one-to-one basis with the information channels.

SEE OR SEARCH THIS CLASS, SUBCLASS:

825+, for plural band selective systems in general.

855.3, for signal multiplexing in a wellbore telemetering system.

SEE OR SEARCH CLASS:

370, Multiplex Communications, appropriate subclasses for combining or distributing information via frequency channels in multiplex communications in general.

**870.13 Time division multiplex:**

This subclass is indented under subclass 870.11. Subject matter whereby the transmission of data involving two or more quantities on a common channel is accomplished by dividing the available time among the quantities to form a composite pulse train.

SEE OR SEARCH THIS CLASS, SUBCLASS:

825+, for selective systems in general.

825.57+, for pulse responsive systems.

855.3, for signal multiplexing in a wellbore telemetering system.

SEE OR SEARCH CLASS:

370, Multiplex Communications, appropriate subclasses for combining or distributing information via time channels in multiplex communications in general.

**870.14 Using particular sync:**

This subclass is indented under subclass 870.13. Subject matter wherein the time division multiplex system includes means to synchronize the transmitter with the receiver.

- (1) Note. The synchronization means of this subclass type must be more than inferred or nominally recited in the claims for classification in this subclass.

SEE OR SEARCH CLASS:

370, Multiplex Communications, subclass 324 for synchronization in satellite multiplex communications, subclass 350 for synchronization in multiplex communications over free space, and subclasses 503+ for synchronization in multiplex communications over wire in general.

**870.15 With plural receiver:**

This subclass is indented under subclass 870.11. Subject matter having more than one indicator.

- (1) Note. An indicator provides a humanly perceptible signal.
- (2) Note. A receiver is analogous to an indicator for the purpose of this definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.41, for plural receivers in a subcombination that have a particular receiver indication.

**870.16 Condition responsive:**

This subclass is indented under subclass 870.01. Subject matter having electrical means to provide a humanly perceptible signal in response to the attainment of a predetermined value of a specific variable.

SEE OR SEARCH THIS CLASS, SUBCLASS:

500+, for alarms which are automatically responsive to a condition.

**870.17 Temperature:**

This subclass is indented under subclass 870.16. Subject matter wherein the condition is a predetermined degree of heat.

**870.18 Using a particular modulation (e.g., phase, frequency, or amplitude):**

This subclass is indented under subclass 870.01. Subject matter wherein the characteristic of a wave (carrier) is modified so that it varies with the instantaneous value of the quantity telemetered (modulating wave).

SEE OR SEARCH THIS CLASS, SUBCLASS:

870.25, for phase variation without specific modulation.

870.26, for frequency variation without specific modulation.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, appropriate subclasses for systems in electrical trans-

mission or interconnection that use modulation.

323, Electricity: Power Supply or Regulation Systems, appropriate subclasses for systems in electricity, voltage magnitude, and phase control that use modulation.

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 100+ for miscellaneous circuits that modify input signal parameters such as frequency, phase, and amplitude.

332, Modulators, appropriate subclasses for modulation, per se, unless particularly adapted to telemetering.

**870.19 Pulse:**

This subclass is indented under subclass 870.18. Subject matter wherein the wave characteristic of a series of modulated pulses is used to convey information.

- (1) Note. A pulse is a variation of a voltage or current normally having a constant value; this variation is characterized by a rise and a decay approaching infinitesimal duration.

SEE OR SEARCH CLASS:

332, Modulators, subclasses 106+ for pulse modulators, per se.

375, Pulse or Digital Communications, appropriate subclasses for generic communications which include modulated pulse signals.

**870.2 Pulse repetition:**

This subclass is indented under subclass 870.19. Subject matter wherein the number of pulses per unit of time is varied in accord with analog physical input.

SEE OR SEARCH CLASS:

708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 101+ for pulse repetition rate in electric digital calculation computer.

**870.21 Analog-to-digital function convertor:**

This subclass is indented under subclass 870.19. Subject matter wherein an analog-to-digital convertor is used in a pulse modulation system.

- (1) Note. Digital is of, or pertaining to, the class of devices or circuits in which the output varies in discrete steps (i.e., pulses or "on-off" operation).
- (2) Note. Analog is of, or pertaining to, the general class of devices or circuits in which the output varies as a continuous function of the input.
- (3) Note. Specific structure of an analog to digital function converter is necessary for classification herein, nominal recitation is not sufficient.

## SEE OR SEARCH CLASS:

- 341, Coded Data Generation or Conversion, subclasses 155+ for an analog to digital converter.
- 708, Electrical Computers: Arithmetic Processing and Calculating, appropriate subclasses for analog to digital function converters used in electrical computers and data processing systems.

**870.22 Permutation code:**

This subclass is indented under subclass 870.19. Subject matter in which the pulse modulation is a code for use in the systematic construction of code groups from a fixed size pulse set.

**870.23 Increase pulses plus decrease pulses:**

This subclass is indented under subclass 870.19. Subject matter in which the pulse modulation consists of two types of pulses, one type to signify increase of quantity telemetered and the other type to signify a decrease of quantity telemetered.

- (1) Note. The pulses may differ, for example, by being of different polarity or they may be sent over two different channels and be of the same polarity.

**870.24 Pulse duration (e.g., pulse train):**

This subclass is indented under subclass 870.19. Subject matter wherein the time interval between the points at which the instantaneous value on the leading and trailing edges of the pulse bears a specified relationship to the analog physical input.

## SEE OR SEARCH CLASS:

- 370, Multiplex Communications, appropriate subclasses for pulse duration used in multiplexing of information.
- 375, Pulse or Digital Communications, subclass 239 for pulse duration used in pulse or digital communications, per se.

**870.25 Phase variation:**

This subclass is indented under subclass 870.01. Subject matter in which the intelligence is transmitted over the telemetered system by means of phase shift.

- (1) Note. Representation of the analog value telemetered by phase control will be found in the claim language.
- (2) Note. Phase shift is the difference between corresponding points on input and output signal wave shapes expressed as degrees lead or lag.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

870.18, for particular phase modulation.

## SEE OR SEARCH CLASS:

- 323, Electricity: Power Supply or Regulation Systems, subclasses 212+ for phase variation in phase control.
- 332, Modulators, subclasses 144+ for phase modulation, per se.
- 370, Multiplex Communications, subclass 215 for phase modulation in multiplex communications.
- 455, Telecommunications, subclasses 110+ for angle modulation in telecommunication.

**870.26 Frequency variation:**

This subclass is indented under subclass 870.01. Subject matter in which the intelligence is transmitted over the telemetry system by means of frequency change.

- (1) Note. Frequency change or conversion is the process of converting a signal to some other frequency by combining it with another frequency.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

870.18, for particular frequency modulation.

SEE OR SEARCH CLASS:

- 323, Electricity: Power Supply or Regulation Systems, appropriate subclasses for frequency variation in voltage magnitude and phase control systems.
- 332, Modulators, subclasses 117+ for frequency modulation, per se.
- 455, Telecommunications, subclass 110 for angle modulation in telecommunications.

**870.27 Plural circuits, each for particular magnitude:**

This subclass is indented under subclass 870.01. Subject matter having plural circuits between the transmitter and the receiver, each circuit being used to designate a particular quantity.

- (1) Note. To be classifiable as a telemetering system, the subject matter must have a sufficient number of indications so as to be substantially continuous. Thus, for example, a system which has three indications to indicate, for example, "plenty", "little", and "in between", would not be classified as a telemetering system, but as a signaling system, for classification in subclasses 286+ of this class.

**870.28 Via radiant energy beam (via particular energy):**

This subclass is indented under subclass 870.01. Subject matter in which the intelligence is transmitted from the transmitter to the receiver by radiant energy.

- (1) Note. The radiant energy means, for example, may be an infrared means.

SEE OR SEARCH CLASS:

- 250, Radiant Energy, subclasses 200+ for photocell systems; and subclasses 338 for infrared and other radiant energy systems.

- 359, Optics: Systems (Including Communication) and Elements, subclasses 109+ for light ray communication systems such as subclasses 113+ for duplex optical communication and subclasses 115+ for multiplex optical communication.

- 455, Telecommunications, subclass 41 for induction or near field systems limited of radio telephony.

**870.29 Photoelectric cell pickup:**

This subclass is indented under subclass 870.28. Subject matter in which the radiant energy beam is sensed by a photoelectric cell.

SEE OR SEARCH CLASS:

- 250, Radiant Energy, subclasses 200+ for photocell systems; and subclasses 388.1+ for infrared and other radiant energy systems.
- 359, Optics: Systems (Including Communication) and Elements, subclasses 113+ for duplex optical communication and subclasses 115+ for multiplex optical communication.

**870.3 With particular transmitter (e.g., piezoelectric, dynamo):**

This subclass is indented under subclass 870.01. Subject matter wherein the transmitter is of the piezoelectric, dynamo, or other types of transmitters which are, per se, provided for elsewhere.

- (1) Note. A transmitter is analogous to a transducer for the purpose of this definition.

**870.31 Inductive transmitter:**

This subclass is indented under subclass 870.3. Subject matter wherein changes in inductance convey the information to be transmitted.

- (1) Note. Inductance is the property which opposes any change in an existing current in a circuit. Inductance is present only when the current is changing.

SEE OR SEARCH CLASS:

- 336, Inductor Devices, appropriate subclasses for inductor devices, per se.

**870.32 Mutual inductance:**

This subclass is indented under subclass 870.31. Subject matter in which voltage is produced in one circuit by the magnetic field change in current in a neighboring circuit.

**870.33 Flux valve type (e.g., with movable saturating magnet):**

This subclass is indented under subclass 870.32. Subject matter in which the mutual inductance is controlled by variably saturating a magnetic field.

- (1) Note. The saturation may be produced, for example, by a movable saturating magnet or by the earth's magnetic field.

**SEE OR SEARCH CLASS:**

33, Geometrical Instruments, subclass 317 for systems limited to the earth's magnetic field.

**870.34 Self-synchronous type:**

This subclass is indented under subclass 870.32. Subject matter in which the mutual inductance has a stator and a rotor which tend to line up magnetically.

- (1) Note. This subclass, for example, contains the familiar selsyn systems.
- (2) Note. A stator is a nonrotating part of a magnetic structure in an induction motor.
- (3) Note. A rotor is a rotating part of a magnetic structure in an induction motor.

**SEE OR SEARCH CLASS:**

318, Electricity: Motive Power Systems, subclass 690 for selsyn-type electric motor systems; and subclasses 654 and 661 for electric motor systems controlled by a selsyn system.

**870.35 Differential type:**

This subclass is indented under subclass 870.32. Subject matter in which the mutual inductance contains two parts, and in which the magnetic field in the two parts flows through a common portion in a differential relationship.

**870.36 Linear variable differential transformer (LVDT):**

This subclass is indented under subclass 870.35. Subject matter comprising means to convert mechanical displacements to proportional electrical voltages.

**870.37 Capacitive transmitter:**

This subclass is indented under subclass 870.3. Subject matter in which a transducer is a variable capacitor.

- (1) Note. A capacitor is a device consisting essentially of two conducting surfaces separated by an insulating material of dielectric.
- (2) Note. A transmitter is analogous to a transducer for the purpose of this definition.

**SEE OR SEARCH CLASS:**

361, Electricity: Electrical Systems and Devices, subclass 271 for variable capacitors.

**870.38 Resistive transmitter:**

This subclass is indented under subclass 870.3. Subject matter in which a transducer is a variable resistor.

- (1) Note. A transmitter is analogous to a transducer for the purpose of this definition.

**SEE OR SEARCH CLASS:**

338, Electrical Resistors, appropriate subclasses for electrical resistor, per se.

**870.39 With supply voltage regulation or compensation:**

This subclass is indented under subclass 870.01. Subject matter having means to regulate the energizing supply or to compensate for changes in supply.

**SEE OR SEARCH CLASS:**

323, Electricity: Power Supply or Regulation Systems, appropriate subclasses for means for regulating voltage and/or current, per se.

**870.4 With particular receiver (e.g., ratiometer):**

This subclass is indented under subclass 870.01. Subject matter comprising a receiver including recited indicating means or significant structure.

- (1) Note. A ratiometer is an instrument which measures electrically the quotient of two quantities.
- (2) Note. A receiver is analogous to an indicator for the purpose of this definition.

SEE OR SEARCH THIS CLASS, SUB-CLASS:  
870.02, for meter reading.

**870.41 Plural receivers:**

This subclass is indented under subclass 870.4. Subject matter in which the telemetering system has plural receivers.

- (1) Note. A receiver is analogous to an indicator for the purpose of this definition.

SEE OR SEARCH THIS CLASS, SUB-CLASS:  
870.15, for plural transmitters with plural receivers with transmitters.

**870.42 With feedback (e.g., reflex along line):**

This subclass is indented under subclass 870.4. Subject matter having means to feedback a signal from the receiver to the transmitter.

- (1) Note. The feedback, for example, may be negative feedback used to improve the stability of the system.
- (2) Note. The feedback may be in any form of energy.

**870.43 Followup (e.g., circuit rebalanced when upset):**

This subclass is indented under subclass 870.42. Subject matter having means responsive to the feedback to reduce the amount of feedback.

- (1) Note. The followup means may, for example, rebalance the system so as to reduce the feedback to zero.

**SEE OR SEARCH CLASS:**

318, Electricity: Motive Power Systems, subclasses 600+ for electric motor rebalancing systems.

**870.44 With discharge device (e.g., CRT):**

This subclass is indented under subclass 870.4. Subject matter having a device which is intended to have an electrical current flow between two spaced electrodes, at least part of the path followed by the flow being constituted by a gas vapor or vacuum.

**SEE OR SEARCH CLASS:**

313, Electric Lamp and Discharge Devices, appropriate subclasses for space discharge devices, per se.  
315, Electric Lamp and Discharge Devices: Systems, appropriate subclasses for cathode ray and gas tube circuits, per se.  
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous electron discharge device circuits.

**901 EXTERNAL CONDITION VEHICLE-MOUNTED INDICATOR OR ALARM:**

This subclass is indented under the class definition. Subject matter having an indicator or alarm in the vehicle actuated in response to a condition or input signal remote from the vehicle.

**SEE OR SEARCH THIS CLASS, SUB-CLASS:**

425.5+, for alarm systems automatically responsive to a condition of a vehicle, especially subclasses 426+ for burglar alarms, subclasses 438+ for internal alarms, and subclasses 463+ for external alarms.  
500+, for condition responsive indicating systems not associated with the vehicle.

**902 Transmitter in another vehicle (e.g., emergency vehicle):**

This subclass is indented under subclass 901. Subject matter having the alarm actuated in response to the receipt of a signal generated by another vehicle.

- (1) Note. The signal could be received from an emergency vehicle (e.g., police, fire) warning of its presence.
- SEE OR SEARCH CLASS:  
455, Telecommunications, subclass 99 for transmitter with vehicle, subclass 345 for receiver with vehicle.
- 903 Relative distance between vehicles (e.g., collision alert):**  
This subclass is indented under subclass 902. Subject matter wherein the alarm indicates the separation between vehicles.
- (1) Note. Potential collision alerting systems are included here when the vehicles are not aircraft.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
961, for potential collision alerting systems when used on aircraft.
- SEE OR SEARCH CLASS:  
342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 29+, 41, and 455 for collision avoidance apparatus using radio wave communications.
- 904 Transmitter in one vehicle only:**  
This subclass is indented under subclass 901. Subject matter including a signal generating source located in the vehicle carrying the indicator or alarm.
- SEE OR SEARCH CLASS:  
455, Telecommunications, subclass 99 for transmitter with vehicle.
- 905 Highway information (e.g., weather, speed limits, etc.):**  
This subclass is indented under subclass 901. Subject matter including an indicator responsive to signals communicating the travel conditions along the highway.
- (1) Note. Included, for example, are indications of the speed limit of the road, the vehicle position with respect to the lane, signals on the vehicle indicating wrong way travel, etc.
- 906 OVERRIDE OF TRAFFIC CONTROL INDICATOR BY COMMAND TRANSMITTER:**  
This subclass is indented under the class definition. Subject matter wherein the normal cycling of a traffic control indicator is interrupted by a remote transmitter not normally connected to the traffic indicator.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
909, for the control of a traffic indicator by a remote station normally controlling the indicator.
- 907 TRAFFIC CONTROL INDICATOR:**  
This subclass is indented under the class definition. Subject matter having means to develop and/or display right of way indications to vehicular traffic.
- SEE OR SEARCH CLASS:  
116, Signals and Indicators, subclasses 63+ for mechanical indicators for street traffic.  
246, Railway Switches and Signals, for related subclasses relating for railway signals.
- 908 Portable:**  
This subclass is indented under subclass 907. Subject matter wherein the indicator can be moved from one place to another.
- SEE OR SEARCH CLASS:  
116, Signals and Indicators, subclass 63 for portable traffic indicators of mechanical design.
- 908.1 Barricade marker:**  
This subclass is indented under subclass 908. Subject matter wherein the indicator is mounted on, or combined with, a portable structure used as a barrier or as a hazard marker.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
473, for similar devices which are intended to be carried in or on a vehicle and used to indicate that the vehicle itself

is a hazard while parked or inoperative.

**909 Plural intersections under common central station control:**

This subclass is indented under subclass 907. Subject matter having plural highways with at least two crossings with a traffic control indicator at each crossing and each under the control of the same central station.

- (1) Note. Mere continuous supply of power is not considered control means.

**910 Central station responsive to traffic detectors:**

This subclass is indented under subclass 909. Subject matter including means responsive to vehicular presence, said means transmitting a presence signal to the central station.

SEE OR SEARCH THIS CLASS, SUBCLASS:  
933, for vehicle detectors, per se.

**911 Central station controls offset (time between beginning of same phase at adjacent intersections):**

This subclass is indented under subclass 910. Subject matter wherein the central station controls the time between the beginning of the same indicator phase at adjacent intersections.

SEE OR SEARCH THIS CLASS, SUBCLASS:  
913, for offset control absent traffic detectors.

**912 Standby cycling implemented if invalid transmission received or loss of transmission occurs:**

This subclass is indented under subclass 909. Subject matter wherein a local controller at an intersection assumes control of the traffic indicators of that intersection if an improper instruction is received from the central station.

**913 Offset control:**

This subclass is indented under subclass 909. Subject matter wherein the central station controls the time between the beginning of the same indicator phase at adjacent intersections.

- (1) Note. The local controller may make offset adjustments but the basic control comes from the central station.

- (2) Note. Systems resynchronizing the indicators from the central station are classified here.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 911, for offset control with traffic detectors.

**914 Split control:**

This subclass is indented under subclass 909. Subject matter wherein the central station controls the percentage of a complete cycle at each intersection allowed for a particular indicator phase.

- (1) Note. The local controller may make split adjustments but the basic control comes from the central station.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 910, for split control with traffic detectors.

**915 Central station includes display of status of indicators:**

This subclass is indented under subclass 909. Subject matter including at the central station a visual representation of the traffic indicators then energized at any particular intersection.

SEE OR SEARCH CLASS:

- 345, Computer Graphics Processing, Operator Interface Processing, and Selective Visual Display Systems, subclasses 2.1 through 2.3 for plural display systems remotely located.

**916 Intersection normally under local controller:**

This subclass is indented under subclass 907. Subject matter including means at each intersection which acts as the main control for determining the traffic indicator energization.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 909, for intersection normally under common central station control.



**917 Controller responsive to traffic detectors:**

This subclass is indented under subclass 916. Subject matter wherein the local controller is responsive to means detecting vehicular presence.

SEE OR SEARCH THIS CLASS, SUBCLASS:

933, for traffic detectors, per se.

**918 Controller, when changing right of way, alters or skips normal "go" cycle of street having no traffic detected:**

This subclass is indented under subclass 917. Subject matter including means not allowing a normal right of way or "go" indicator period when no traffic is detected.

**919 Plural cross highways at intersection each have traffic detectors:**

This subclass is indented under subclass 917. Subject matter including plural vehicular presence detector means each located at a different cross highway in the intersection.

**920 Density determines split:**

This subclass is indented under subclass 919. Subject matter wherein the number of vehicles detected per unit time or area determines the percentage of a complete cycle allowed for a particular indicator.

SEE OR SEARCH CLASS:

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 9 for counting of vehicles, per se.

701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 118 for computation of traffic analysis with determination of traffic density.

**921 Extension of time:**

This subclass is indented under subclass 920. Subject matter wherein the energization period for an indicator phase may be increased beyond its normal time period.

**922 Density determines split:**

This subclass is indented under subclass 917. Subject matter wherein the number of vehicles detected per unit time or area determines the

percentage of a complete cycle allowed for a particular indicator phase.

SEE OR SEARCH CLASS:

701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 118 for computation of traffic analysis with determination of traffic density.

**923 Extension of time:**

This subclass is indented under subclass 917. Subject matter wherein the energization period for an indicator phase may be increased beyond its normal time period.

**924 Local controller can be superceded by central station controller:**

This subclass is indented under subclass 916. Subject matter wherein the traffic indicator control may be taken over by the central station.

SEE OR SEARCH THIS CLASS, SUBCLASS:

909, when plural intersections are normally under common central station control.

**925 Pedestrian control:**

This subclass is indented under subclass 916. Subject matter wherein a pedestrian gains control of the traffic control indicator.

**926 Manual setting of cycle length and split times:**

This subclass is indented under subclass 916. Subject matter including details of a controller having means to set the cycle length and split times by hand.

**927 Rotating cam structure (specific structure required):**

This subclass is indented under subclass 916. Subject matter including specific details of electromechanical controller structure.

SEE OR SEARCH CLASS:

116, Signals and Indicators, subclasses 63+ for mechanical indicators for street traffic.

**928 Combined (e.g., toll systems, one-way):**

This subclass is indented under subclass 907. Subject matter wherein a diverse art device is combined with a traffic control indicator.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
932.2, for systems specific to parking lots.
- 929 Indication of time remaining before change of phase:**  
This subclass is indented under subclass 907. Subject matter having a means auxiliary to the traffic control indicator indicating when the upcoming change in the state of the traffic control indicator will occur.
- 930 Electromechanical movable auxiliary indicator:**  
This subclass is indented under subclass 929. Subject matter wherein the auxiliary indicator changes position thereby indicating the upcoming change in traffic control indicator phase.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
929, where the auxiliary indicator is different lights actuated in sequence.
- 931 Traffic control or local controller failure indicator:**  
This subclass is indented under subclass 907. Subject matter having means to detect failure of one of the traffic control indicators or the presence of an improper output from the local controller.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
641+, for generic alarms responsive to the condition of an indicator light element.
- 932 Pacing (e.g., vehicle keeps pace with sequentially activated lights):**  
This subclass is indented under subclass 907. Subject matter having means, distinct from the conventional intersection traffic control indicator, for supplying an indication for maintaining flow of traffic at a specific pace.
- 932.1 Pivoted:**  
This subclass is indented under subclass 907. Subject matter wherein the right-of-way indicating devices rotate or pivot in whole or in part.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
487+, for electromagnetically actuated pivoted indicating devices mounted on a vehicle.
- SEE OR SEARCH CLASS:  
116, Signals and Indicators, subclasses 46+ and 51+ for manually actuated pivoted indicating devices mounted on a vehicle.
- 932.2 VEHICLE PARKING INDICATORS:**  
This subclass is indented under the class definition. Subject matter including electrical signalling systems or devices which: (a) indicate the availability of parking, (b) direct a driver to available parking spaces, or (c) assist a driver in parking his vehicle.
- (1) Note. Included here are systems and devices which control traffic within a parking lot or garage as well as those which assist a driver in properly placing his vehicle within a parking space.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
436+, for vehicle mounted devices which may assist a driver in parking his vehicle by indicating contact with external objects such as curbs, walls, or other vehicles.
- 933 VEHICLE DETECTORS:**  
This subclass is indented under the class definition. Subject matter for sensing the presence or motion of traffic.
- SEE OR SEARCH CLASS:  
246, Railway Switches and Signals, subclasses 122+ for train position indication and subclasses 246+ for car actuated circuit controllers.
- 377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 9 for vehicle counters, per se.

**934 Density:**

This subclass is indented under subclass 933. Subject matter including means for detecting and indicating the number of vehicles per unit time or area.

**SEE OR SEARCH CLASS:**

701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 118 for computation of traffic analysis with determination of traffic density.

**935 Discriminates vehicle direction:**

This subclass is indented under subclass 933. Subject matter having means to distinguish between particular directions of travel.

**936 Speed and overspeed:**

This subclass is indented under subclass 933. Subject matter having means for detecting the velocity of the vehicle, said means being external to the vehicle.

**SEE OR SEARCH CLASS:**

346, Recorders, subclass 33 for vehicle speed recorders.  
701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 119 for computation of traffic analysis with determination of traffic speed.

**937 With camera:**

This subclass is indented under subclass 933. Subject matter including means to pictorially record the passage of a vehicle.

**SEE OR SEARCH CLASS:**

346, Recorders, subclass 107.2 for optical recorders including camera for recording phenomenal information.

**938 Compensation for vehicle remaining at sensor position:**

This subclass is indented under subclass 933. Subject matter including means for inhibiting a "vehicle detected" output when the vehicle detector is constantly sensing the same vehicle.

**939 Environmental or drift compensation:**

This subclass is indented under subclass 933. Subject matter including means for recalibrating the vehicle detector circuitry to compensate for nonvehicle outside influences.

- (1) Note. Examples of outside influences are temperature, humidity, aging of circuitry components.

**940 With pneumatic:**

This subclass is indented under subclass 933. Subject matter wherein the vehicle detector includes a means operated by the pressure or exhaustion of air.

**SEE OR SEARCH CLASS:**

116, Signals and Indicators, for mechanical indicators.  
200, Electricity: Circuit Makers and Breakers, subclasses 81+ for fluid pressure switches, per se, and subclasses 85+ for weight switches, per se.

**941 Inductive:**

This subclass is indented under subclass 933. Subject matter wherein the vehicle detector comprises measuring electromotive for which will be generated as a result of a given rate of change of current.

**SEE OR SEARCH CLASS:**

246, Railway Switches and Signals, subclass 249 for magnetic responsive car actuated circuit controllers.  
324, Electricity: Measuring and Testing, subclasses 200+ for generic magnetic measuring and testing devices.

**942 Photoelectric:**

This subclass is indented under subclass 933. Subject matter wherein the vehicle detector comprises a light source and sensor means.

**SEE OR SEARCH CLASS:**

250, Radiant Energy, subclasses 200+ for photocells; circuits and apparatus.

**943 Sonic or ultrasonic:**

This subclass is indented under subclass 933. Subject matter wherein the vehicle detector comprises a means for sensing vibrations in the air whether audible or a higher frequency.

**SEE OR SEARCH CLASS:**

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclass 93 and 94 for presence or movement detection.

- 944 PEDESTRIAN GUIDANCE:**  
This subclass is indented under the class definition. Subject matter having means to develop and/or display right of way indications to pedestrian traffic.
- 945 AIRCRAFT ALARM OR INDICATING SYSTEMS:**  
This subclass is indented under the class definition. Subject matter having alarm devices or indicators in or used with aircraft.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
500+, for a system having only nominal aircraft structure and significant alarm structure. Significant limitations to the aircraft would necessitate classification in subclass 945.
- 946 Nonairplane (e.g., balloon or helicopter):**  
This subclass is indented under subclass 945. Subject matter including aircraft whose lift is provided by other than functionally stationary airfoils.
- SEE OR SEARCH CLASS:  
73, Measuring and Testing, subclass 178 for helicopter navigation.  
244, Aeronautics, subclasses 17.11+ for helicopters, per se, and subclasses 31+ for balloons, per se.
- 947 Land-based landing guidance:**  
This subclass is indented under subclass 945. Subject matter having means in the immediate vicinity of a landing field to guide the aircraft in its descent to the landing field.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
985, for similar systems when used to guide watercraft.
- SEE OR SEARCH CLASS:  
244, Aeronautics, subclass 114 for landing field arrangements of nonelectrical design.
- 948 Aircraft actuation of land-based landing guides:**  
This subclass is indented under subclass 947. Subject matter wherein the landing guides are normally in a standby condition and are activated by the aircraft.
- 949 Wind direction:**  
This subclass is indented under subclass 947. Subject matter including means indicating the direction of the air currents at the landing field.
- SEE OR SEARCH CLASS:  
73, Measuring and Testing, subclass 170.11 for meteorology with fluid flow velocity determination.
- 950 Movable (e.g., rotatable) guides:**  
This subclass is indented under subclass 947. Subject matter having guides that are changeable in position.
- 951 Phased landing guidance (e.g., runway approach, landing, touchdown):**  
This subclass is indented under subclass 947. Subject matter wherein landing guides are clustered at different locations for different parts of the landing path for supplying different guidance indications.
- 952 Particular energy guide source (e.g., sound, electric field, radio):**  
This subclass is indented under subclass 947. Subject matter including the use of a specific type of energy in the guide source.
- SEE OR SEARCH CLASS:  
342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 385+ for directive beacons.
- 953 Visual source:**  
This subclass is indented under subclass 952. Subject matter wherein the guide source can be seen by the pilot.
- 954 Alignment of plural sources:**  
This subclass is indented under subclass 953. Subject matter wherein plural sources when seen in a particular alignment indicate the correct landing path.

**955 Plural colors:**

This subclass is indented under subclass 953. Subject matter including plural sources of different visible light wavelengths or colors.

**956 Modulated light source:**

This subclass is indented under subclass 953. Subject matter having means to vary the amplitude or frequency or phase of flashing of the light other than a mere change in color.

SEE OR SEARCH THIS CLASS, SUBCLASS:

953, through 955, for flashing of lights in merely an on/off nature without unique communications.

SEE OR SEARCH CLASS:

359, Optics: Systems (Including Communication) and Elements, subclasses 109+ for optical communication.

**957 Magnetic field guide:**

This subclass is indented under subclass 952. Subject matter wherein the guide source is a conductor or coil carrying a current within which moving electric charges will be acted upon by a magnetic force.

**958 Docking guidance:**

This subclass is indented under subclass 945. Subject matter including means to guide the pilot to a particular airport bay.

SEE OR SEARCH THIS CLASS, SUBCLASS:

932.2, for parking systems.

**959 Takeoff indicator:**

This subclass is indented under subclass 945. Subject matter having indicator means operable during the lift off phase of flight.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclass 178 for takeoff navigation monitors.  
701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 15 for computation including indication or control of takeoff.

**960 Landing gear indicator:**

This subclass is indented under subclass 945. Subject matter having indicator means responsive to the condition or location (e.g., up or down) of the landing wheel structure.

**961 Potential collision with other aircraft:**

This subclass is indented under subclass 945. Subject matter including an alarm indicating a possible upcoming crash with another aircraft.

SEE OR SEARCH THIS CLASS, SUBCLASS:

903, for potential collision alerting alarms when receiving a transmitted signal from another vehicle.

SEE OR SEARCH CLASS:

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 29+, 41 and 455 for collision avoidance apparatus using radio wave communications.

**962 Icing indicator:**

This subclass is indented under subclass 945. Subject matter including means combined with particular structure unique to aircraft for indicating deposits of frozen water on critical aircraft structures.

SEE OR SEARCH THIS CLASS, SUBCLASS:

580+, for alarms responsive to ice conditions not aircraft related.

**963 Flight alarm:**

This subclass is indented under subclass 945. Subject matter having alarms on-board the aircraft actuable upon a particular flight condition.

(1) Note. Any indication which could be considered both an alarm and a nonalarm type indication is classified as an alarm.

SEE OR SEARCH THIS CLASS, SUBCLASS:

971, for nonalarm flight condition indicators.

## SEE OR SEARCH CLASS:

- 73, Measuring and Testing, subclass 178 for related navigation systems.
- 244, Aeronautics, subclasses 175+ for related aircraft control systems.
- 318, Electricity: Motive Power Systems, subclasses 580+ for vehicle guidance systems with single axis control.
- 701, Data Processing: Vehicles, Navigation, and Relative Location, subclasses 1+ for vehicles and vehicles indication, operation, or guidance.

**964 Phased warnings for same flight condition:**  
This subclass is indented under subclass 963. Subject matter having plural alerting alarms for different deviations from the standard for a particular flight parameter.

**965 Tactile:**  
This subclass is indented under subclass 963. Subject matter having an alarm means which can be perceived by touch.

SEE OR SEARCH THIS CLASS, SUBCLASS:  
407.1+, for tactile alarms, per se.

**966 Stall:**  
This subclass is indented under subclass 963. Subject matter having an alarm which activates when the aircraft loses the air speed necessary for support and control.

**967 Attitude (including yaw, angle of attack, roll, pitch, glide slope):**  
This subclass is indented under subclass 963. Subject matter having an alarm responsive to the position of the airborne vehicle by the inclination of its axes to some frame of reference.

- (1) Note. If not otherwise specified, this frame of reference is fixed to the earth.

SEE OR SEARCH CLASS:  
33, Geometrical Instruments, subclass 328 for attitude indicators.

**968 Wind shear:**  
This subclass is indented under subclass 963. Subject matter having an alarm when the vertical gradient of the horizontal wind exceeds flight limits for a particular altitude or airspeed.

## SEE OR SEARCH CLASS:

- 73, Measuring and Testing, subclass 178 for navigation landing monitors.

**969 Speed:**  
This subclass is indented under subclass 963. Subject matter having an alarm responsive to the velocity of the aircraft relative to air.

## SEE OR SEARCH CLASS:

- 700, Data Processing: Generic Control Systems or Specific Applications, subclass 304 for speed responsive control system.
- 701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 121 for speed control of aircraft.
- 702, Data Processing: Measuring, Calibrating, or Testing, subclass 96 for calibration of a speed measurement system, subclasses 142+ for data processing in a generic speed measurement system, particularly subclass 144 for air speed.

**970 Altitude:**  
This subclass is indented under subclass 963. Subject matter having an alarm responsive to the distance from the aircraft to ground or sea level.

**971 Nonalarm flight indicator:**  
This subclass is indented under subclass 945. Subject matter having means on-board the aircraft to indicate to the pilot information concerning a flight condition.

SEE OR SEARCH THIS CLASS, SUBCLASS:  
963, for similar systems with a flight condition alarm.

**972 Runway presentation:**  
This subclass is indented under subclass 971. Subject matter having an indicator on board the aircraft indicating to the pilot a representation of the landing field and the position of the aircraft with respect to it.

- (1) Note. Indicators showing the position of the aircraft with respect to the desired flight path position and not having a run-

way representation are in subclasses 973-979 below.

**973 Indicator of at least four flight parameters (altitude, speed, etc.):**

This subclass is indented under subclass 971. Subject matter having combined in a single indicator element means to indicate the value of at least four different flight parameters.

**974 Attitude:**

This subclass is indented under subclass 971. Subject matter having a changeable indicator responsive to the position of the aircraft by the inclination of its axes to a frame of reference.

- (1) Note. If not otherwise specified, this frame of reference is fixed to the earth.

SEE OR SEARCH CLASS:

33, Geometrical Instruments, subclass 328 for attitude indicators.

**975 Roll or pitch:**

This subclass is indented under subclass 974. Subject matter having the indicator representing the angle between the longitudinal axis of the aircraft and the relative wind or the angle the aircraft must be rotated about its longitudinal axis in order to bring its lateral axis into a horizontal plane.

**976 Glide slope or path:**

This subclass is indented under subclass 974. Subject matter having the indicator representing the summation of the angle between the chord of the airfoil and its direction of motion relative to the air and the angle of pitch.

**977 Altitude:**

This subclass is indented under subclass 971. Subject matter having an indicator representing the distance from the aircraft to ground or sea level.

**978 Speed:**

This subclass is indented under subclass 971. Subject matter having an indicator representing the velocity of the aircraft relative to the surrounding air or to ground.

**979 Heading (includes deviation from desired course):**

This subclass is indented under subclass 971. Subject matter having an indicator representing the position or direction of the aircraft with respect to a desired course or course direction.

**980 Indicator visible in pilot's line-of-sight through windscreen:**

This subclass is indented under subclass 971. Subject matter wherein the pilot can observe the indicator while his line-of-sight is through the windscreen or windshield.

**981 Aircraft beacons:**

This subclass is indented under subclass 945. Subject matter having beacons on-board the aircraft perceptible by an observer remote from the aircraft.

SEE OR SEARCH CLASS:

362, Illumination, subclasses 470+ for aircraft light structure.

**982 Lights communicate (e.g., direction, altitude, reference position to observer):**

This subclass is indented under subclass 981. Subject matter wherein the beacons are visual signals which indicate to the observer information concerning the flight path or position of the aircraft.

- (1) Note. For example, this information may be the direction, altitude, reference position etc., of the aircraft to the observer.

**983 Obstruction beacon:**

This subclass is indented under subclass 945. Subject matter having a beacon at the location of an object to warn aircraft of the presence of that object.

**984 WATERCRAFT ALARM OR INDICATING SYSTEMS:**

This subclass is indented under the class definition. Subject matter having alarms or indicators particular to boats or other aquatic type vehicles.

SEE OR SEARCH CLASS:

114, Ships, for related subject matter.

**985 Navigation guides (e.g., channel lights):**

This subclass is indented under subclass 984. Subject matter having means to direct a watercraft to a particular location.

- (1) Note. Included are channel or harbor lights when used for guidance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

947, for similar systems when used to guide aircraft.

**986 Anchor movement:**

This subclass is indented under subclass 984. Subject matter having an alarm actuated upon movement of a device which holds the watercraft in place.

**987 Rudder position indicator:**

This subclass is indented under subclass 984. Subject matter having an indicator showing the position of the movable element hinged at the stern of the boat and used for steering.

**988 VEHICLE POSITION INDICATION:**

This subclass is indented under the class definition. Subject matter having means to indicate the position or location of a vehicle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

901, for electrical condition vehicle-mounted indicator or alarm.

933, for vehicle detectors.

**989 At remote location:**

This subclass is indented under subclass 988. Subject matter wherein the indication is developed at a location remote from the vehicle.

**990 With map display:**

This subclass is indented under subclass 989. Subject matter wherein the remote location includes a map with the location of the vehicle indicated on the map.

SEE OR SEARCH THIS CLASS, SUBCLASS:

286.01, for nonvehicle map display.

995, for map located on the vehicle.

**991 Position indications transmitted by vehicle after receipt of information from local station:**

This subclass is indented under subclass 989. Subject matter wherein the vehicle receives its location indication from a local station in its vicinity, then transmits that location indication to a remote station.

**992 Position indication transmitted at periodic intervals (e.g., distance travelled):**

This subclass is indented under subclass 989. Subject matter wherein the position indication is transmitted to the remote station periodically (e.g., the distance travelled by the vehicle defining the periodic interval).

**993 Position indication transmitted by local station to remote location:**

This subclass is indented under subclass 989. Subject matter wherein a local station in the vicinity of the vehicle detects the vehicle and transmits the position indication of the vehicle to a remote station.

**994 Vehicle's arrival or expected arrival at remote location along route indicated at that remote location (e.g., bus arrival systems):**

This subclass is indented under subclass 989. Subject matter wherein an indicator at a remote location indicates when a vehicle is expected to arrive at that remote location.

**995 Map display:**

This subclass is indented under subclass 988. Subject matter including a map with the location of the vehicle indicated on the map.

SEE OR SEARCH THIS CLASS, SUBCLASS:

990, for the map located at a remote location.

**996 Prerecorded message describes position:**

This subclass is indented under subclass 988. Subject matter wherein the indication includes a prerecorded message describing the position of the vehicle.



## SEE OR SEARCH CLASS:

360, Dynamic Magnetic Information Storage or Retrieval, subclass 12 for magnetic recording or reproducing for automatic announcing.

**999 MISCELLANEOUS**

This subclass is indented under the class definition. Subject matter not provided for above.

## FOREIGN ART COLLECTIONS

The definitions below correspond to abolished subclasses from which these collections were formed. See the Foreign Art Collection Schedule of this Class for specific correspondences. [Note: the titles and definitions for indented art collections include all the details of the one(s) that are hierarchically superior.]

**FOR 100 Door or window movement:**

Foreign art collections including subject matter responsive to movement of a temporary room closure.

**FOR 101 Article placement or removal:**

Foreign art collections including subject matter responsive to the removal from, or placement in, a protected area, of an object.

**FOR 102 Detectable device on protected article:**

Foreign art collections including subject matter where there is a device (e.g., a magnet) on the protected article to which the system is responsive.

**FOR 103 Human or animal:**

Foreign art collections including subject matter responsive to the condition of a human being or an animal.

**FOR 104 Position responsive:**

Foreign art collections including subject matter responsive to the position of one object relative to another.

**FOR 105 Specified indicator structure:**

Foreign art collections including subject matter wherein the means translating electrical signals into humanly perceptible signals are particularly described.

**FOR 106 Specified power supply or housing:**

Foreign art collections including subject matter wherein either some portion of the structure of the housing or of the energizing supply, or a function of the energizing supply additional to energization is particularly described.

**FOR 107 Loop:**

Foreign Art Collection having a plurality of controlled devices connected by a communication line in a closed series configuration.

**FOR 108 Interrogation response:**

Foreign art collection having an information-containing device, an information source control device for interrogating the information-containing device, and a device for presenting the perceptible form.

**FOR 109 Printout (e.g., logging) or display:**

Foreign art collection wherein the information presenting device includes a printing device forming a permanent or semipermanent record of the information.

**FOR 110 Intelligence comparison (340/825.3):**

Foreign art collection under the subclass definition 825 which compares an information bearing item or signal with an information reference, and performing a control function in accordance with the comparison.

**FOR 111 Authorization control (e.g., entry into an area) (340/825.31):**

Foreign art collection under collection FOR 110 wherein the comparison determines the operation of a controlled device to permit an individual to perform some action.

**FOR 112 With alarm or indication of improper access (340/825.32):**

Foreign art collection under collection FOR 111 which additionally produces a humanly perceptible signal indicative of an access attempt by other than the correct signal.

**FOR 113 Credit (340/825.33):**

Foreign art collection under collection FOR 111 wherein a comparison is made with the balance in an individual's account so as to permit or deny immediate receipt of a desired value of goods or money for future payment.

**FOR 114 Authentication (e.g., identity)( 340/825.34):**

Foreign art collection under collection FOR 110 which compares characteristics or data to determine if an object or document is valid, or the identify of an individual.

**FOR 115 Commodity (e.g., vending) (340/825.35):**

Foreign art collection under collection FOR 110 Subject matter under subclass 825.3 providing for the receipt, dispensing, or counting of an item.

**FOR 203 Channel selection (340/825.03)**

Foreign art collection under subclass definition 825 having a plurality of alternative communication lines and selection of less than the total number of lines for signal transmission.

**FOR 204 Code or pulse responsive (340/825.04)**

Foreign art collection under collection FOR 203 wherein the channel selection is performed in response to a specified pulse pattern or pulse.

**FOR 206 Monitoring and control (e.g., supervisory):**

Foreign art collection under subclass 825 wherein a signal representative of the actual status of the controlled device, with respect to an intended controlled function, is transmitted back to the selective signal source.

**FOR 207 Having addressing:**

Foreign art collection under collection FOR 206 with a plurality of controlled devices, each of which is responsive to a unique signal so as to permit individual control.

**FOR 208 Polling or roll call:**

Foreign art collection under collection FOR 207 wherein all of the controlled devices are caused to transmit a representative signal in response to a particular signal.

**FOR 209 Quiescent:**

Foreign art collection under collection FOR 206 wherein the representative signal is transmitted solely in response to a change in condition.

**FOR 211 Continuous:**

Foreign art collection wherein the scanning is automatically restarted at its conclusion.

**FOR 210 Scanning:**

Foreign art collection under collection FOR 206 under collection FOR 206 having plural controlled devices with successive transmission of representative signals from each of the controlled devices.

**FOR 211 Continuous:**

Foreign art collection under collection FOR 210 wherein the scanning is automatically restarted at its conclusion.

**FOR 212 Interrupted:**

Foreign art collection under collection FOR 210 having structure to interrupt the normal scanning sequence.

**FOR 213 Automatic:**

Foreign art collection under collection FOR 212 wherein the interruption is in response to a predetermined representative signal.

**FOR 214 Synchronization:**

Foreign art collection under collection FOR 206 including a reference timing function for operating plural system components.

**FOR 215 Having storage or recording:**

Foreign art collection under collection FOR 206 combined with the production of a permanent or semipermanent record of a control or representative signal.

**FOR 216 Fault condition:**

Foreign art collection under collection FOR 206 which produces a representative signal in response to a malfunction of the selective device.

**FOR 217 Having indicator:**

Foreign art collection under collection FOR 206 having an element which produces a humanly perceptible signal.

**FOR 218 Relay:**

Foreign art collection under collection FOR 206 having an electromagnetic relay.

**FOR 244 Code responsive (e.g., paging) (340/825.44)**

Foreign art collection under subclass definition 825.36 wherein the indication is controlled or actuated in accordance with a predetermined control signal.

**FOR 245 Distress signal alarm (340/825.45)**

Foreign art collection under collection FOR 244 responsive to the receipt of signals having standardized characteristics from any transmitter.

**FOR 246 Vibratory (tactual) alarm (340/825.46)**

Foreign art collection under collection FOR 244 wherein the indicating element produces a shaking vibration which is felt rather than heard.

**FOR 247 Group call (340/825.47)**

Foreign art collection under collection FOR 244 including plural indicating devices each actuated by a signal unique thereto, and each also responsive to a signal actuating a plurality of such indicating devices.

**FOR 248 Tone code (340/825.48)**

Foreign art collection under collection FOR 244 wherein the control signal is a predetermined pattern of successive audio frequency modulated signals.

**FOR 279 Matrix (340/825.79)**

Foreign art collection under subclass definition 825 drawn to a two or more dimensional array of electrical elements in a receiver for distinguishing different control signals, and not elsewhere classifiable.

**FOR 280 Plural stage (340/825.8)**

Foreign art collection under collection FOR 279 wherein each element of the matrix is itself a matrix.

**FOR 281 Electroluminescent elements (340/825.81)**

Foreign art collection under collection FOR 279 wherein each element of the matrix includes an element which emits light when excited by electrical energy.

**FOR 282 Light-emitting diode (340/825.82)**

Foreign art collection under collection FOR 281 wherein a light-emitting element is a semiconductor device having a barrier layer and two terminals.

**FOR 283 Programmable (340/825.83)**

Foreign art collection under collection FOR 279 wherein the array or an element thereof has a settable signal response in accordance with a programmed or other setting by an operator.

**FOR 284 Having fusible element (340/825.84)**

Foreign art collection under collection FOR 283 wherein a matrix element or link thereto has current fusible conductor which modifies the characteristics of the array when fused.

**FOR 285 Semiconductor crosspoint (340/825.85)**

Foreign art collection under collection FOR 279 wherein a matrix element has an electrical conductivity intermediate that of conductors and that of insulators.

**FOR 286 Integrated circuit (340/825.86)**

Foreign art collection under collection FOR 285 wherein a matrix element includes plural circuit elements inseparably mounted upon a continuous substrate.

**FOR 287 Logic (340/825.87)**

Foreign art collection under collection FOR 285 wherein the matrix processes the control signal to form a nonarithmetic digital output.

**FOR 288 Bistable (340/825.88)**

Foreign art collection under collection FOR 285 wherein the semiconductor element has, or is part of, a circuit having two stable operating states, one of which is set by a control signal.

**FOR 289 Switching element (340/825.89)**

Foreign art collection under collection FOR 285 wherein the semiconductor changes between two distinct conductive states in accordance with the value of an applied signal.

**FOR 290 Transistor (340/825.9)**

Foreign art collection under collection FOR 285 wherein the semiconductor element has three or more electrodes and a potential barrier in or on the semiconductor material.

**FOR 291 Field effect transistor (340/825.91)**

Foreign art collection under collection FOR 290 wherein the resistance between two terminals of the transistor is controlled by the field produced by the voltage applied to a third terminal.

**FOR 292 Four or more electrodes (340/825.92)**

Foreign art collection under collection FOR 290 wherein the transistor has more than three electrodes contacting the semiconductor material.

**FOR 293 Plural (340/825.93)**

Foreign art collection under collection FOR 290 wherein a semiconductor matrix element includes a circuit having two or more transistors.

**FOR 294 Diode (340/825.94)**

Foreign art collection under collection FOR 285 wherein the semiconductor element has a potential barrier and two electrodes.

**FOR 295 Charge storage (340/825.95)**

Foreign art collection under collection FOR 294 wherein a diode is, or is connected to, an element which stores electrostatic energy.

**FOR 296 Plural diodes at crosspoint (340/825.96)**

Foreign art collection under collection 294 wherein a semiconductor matrix element includes more than one diode.

**FOR 301 Paging (340/311.1)**

Foreign art collection under subclass definition 286.01 wherein there is a humanly perceptible signal which is used to summon an individual.

**FOR 311 SYSTEM WITH RECEIVER SELECTION (455/31.1)**

Foreign art collection under the class definition wherein an operator at a transmitter may selectively communicate with a selected one of a plurality of receivers or wherein an operator at the transmitter or any one of the receivers may signal any one or all of the remainder of the transmitters or receivers that a given condition of the system exists.

**FOR 312 Control of selectively responsive paging arrangement over telephone line (379/FOR 102)**

Foreign art collection under FOR 311 which telephone equipment is use to transmit a signal to selectively operate of control equipment to produce a perceptible notification signal over an electromagnetic link.

**FOR 321 Receiver scans for address signal (455/32.1)**

Foreign art collection under collection FOR 311 wherein a transmitter transmits an address signal which uniquely identifies a particular receiver or group of receivers and wherein the receiver scans a plurality of different frequencies until its own address signal is detected.

**FOR 326 Plural stage matrix system (e.g., path finding) (340/826)**

Foreign art collection under collection FOR 203 having plural serial switch arrays.

**FOR 327 Alternate routing (340/827)**

Foreign art collection under collection FOR 326 wherein the path through the plural stage matrix system may be modified upon failure of connection between the desired input and output line.

**FOR 381 Coded sequence (455/38.1)**

Foreign art collection under collection FOR 311 wherein a series of encoded pulses is used, for example, to identify a device or an information signal.

**FOR 382 Having actuation (e.g., turn on/off or alarm indication, etc) (455/38.2)**

Foreign art collection under collection FOR 381 wherein an operating condition of a device at a remote receiver is actuated from a distance in response to a sequence of encoded pulses which is sent over an intervening wired or a radio modulated carrier wave circuit.

**FOR 383 Power control or battery saving (455/38.3)**

Foreign art collection under collection FOR 382 wherein a power supply at a remote station is turned on or off upon receiving the encoded pulses.

**FOR 384 Visual indication (455/38.4)**

Foreign art collection under collection FOR 382 including a device to generate signals

perceptible by the human eye in response to a sequence of encoded pulses.

**FOR 385 Tone sequence (455/38.5)**

Foreign art collection under collection FOR 382 including a series of encoded pulses of audio frequencies.

END